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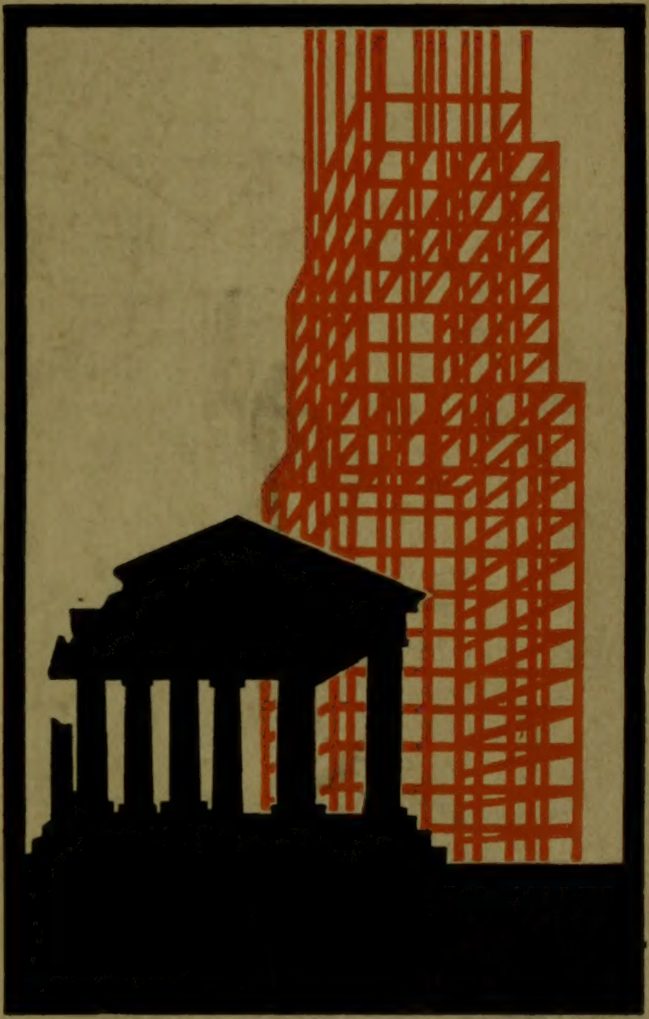

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1931

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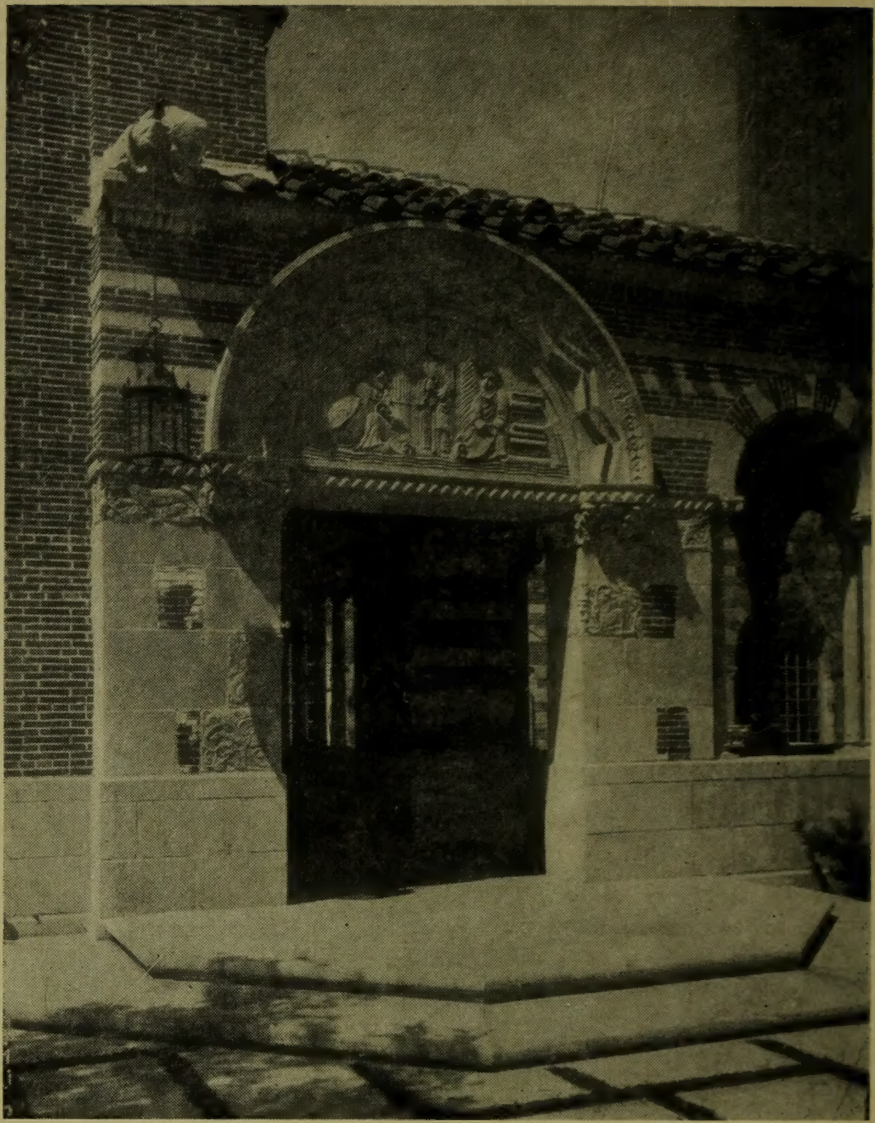

Seeley Winters Mudd Memorial Hall of Philosophy, University of Southern California. R.C. Flewelling, architect; R. Westcott Co., general contractor; Geo. White, brick work contractor; French & Melone, roofing tile contractors;

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THE ARCHITECTURAL RECORD

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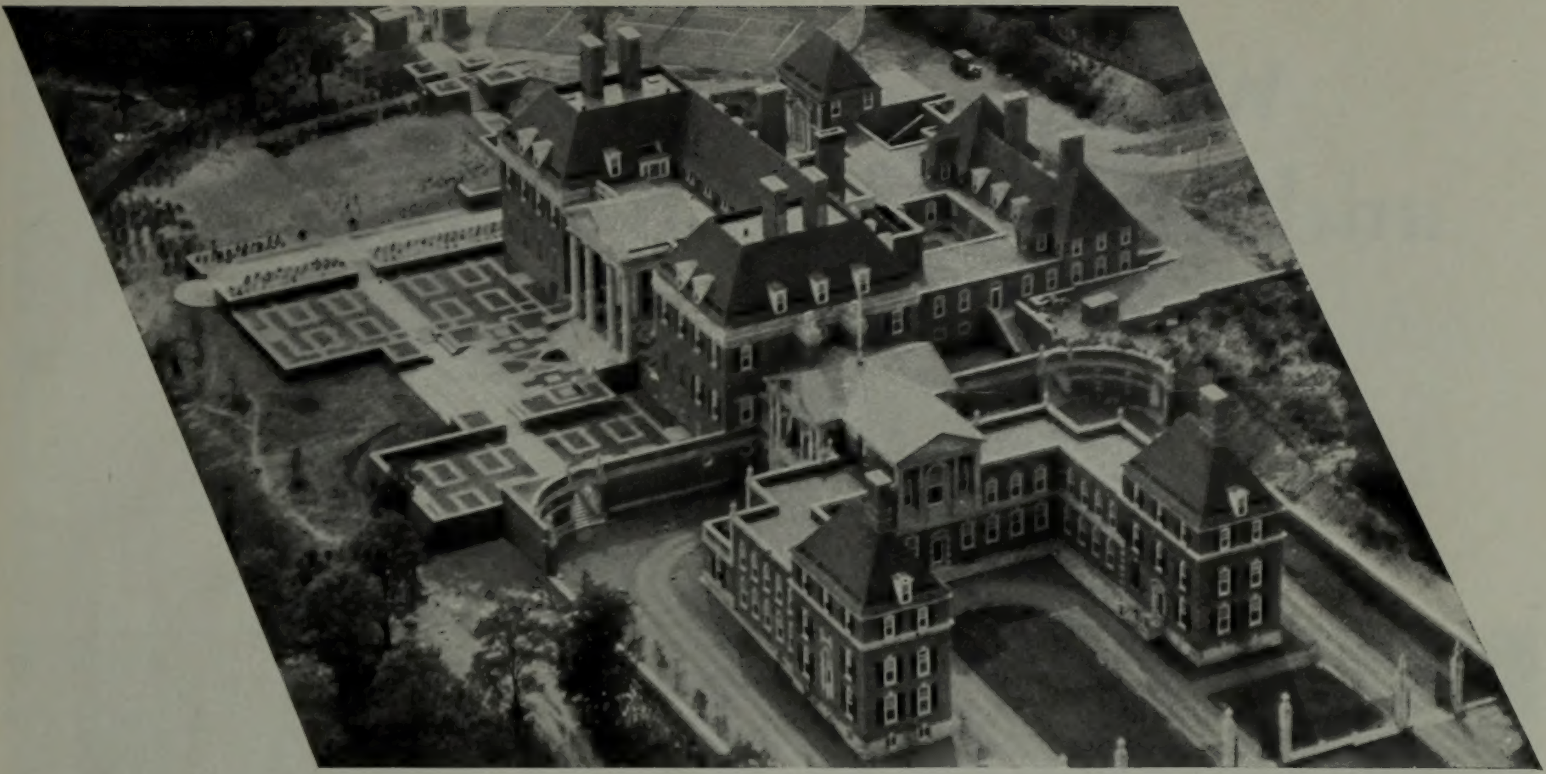

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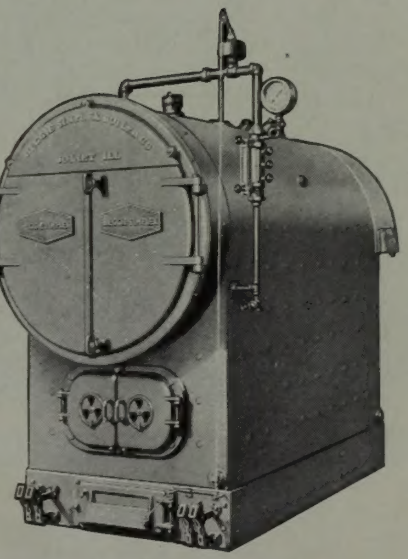

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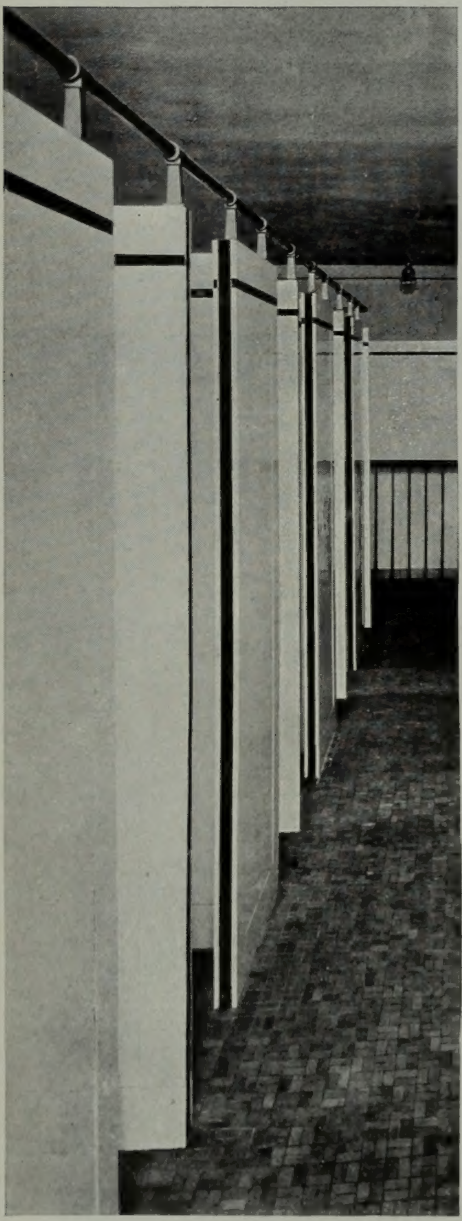

Girls' shower room at Lackawanna High School, Lackawanna, N. Y. Finished in white Vitrolite with black trim.

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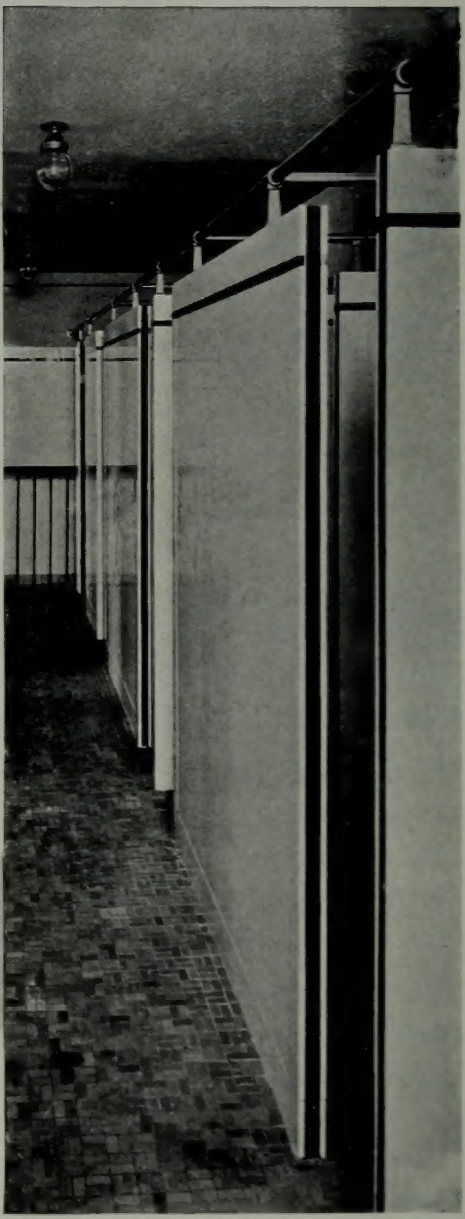

Architects—Bley and Lyman, Buffalo, N. Y. Select Vitrolite for the work mentioned above.

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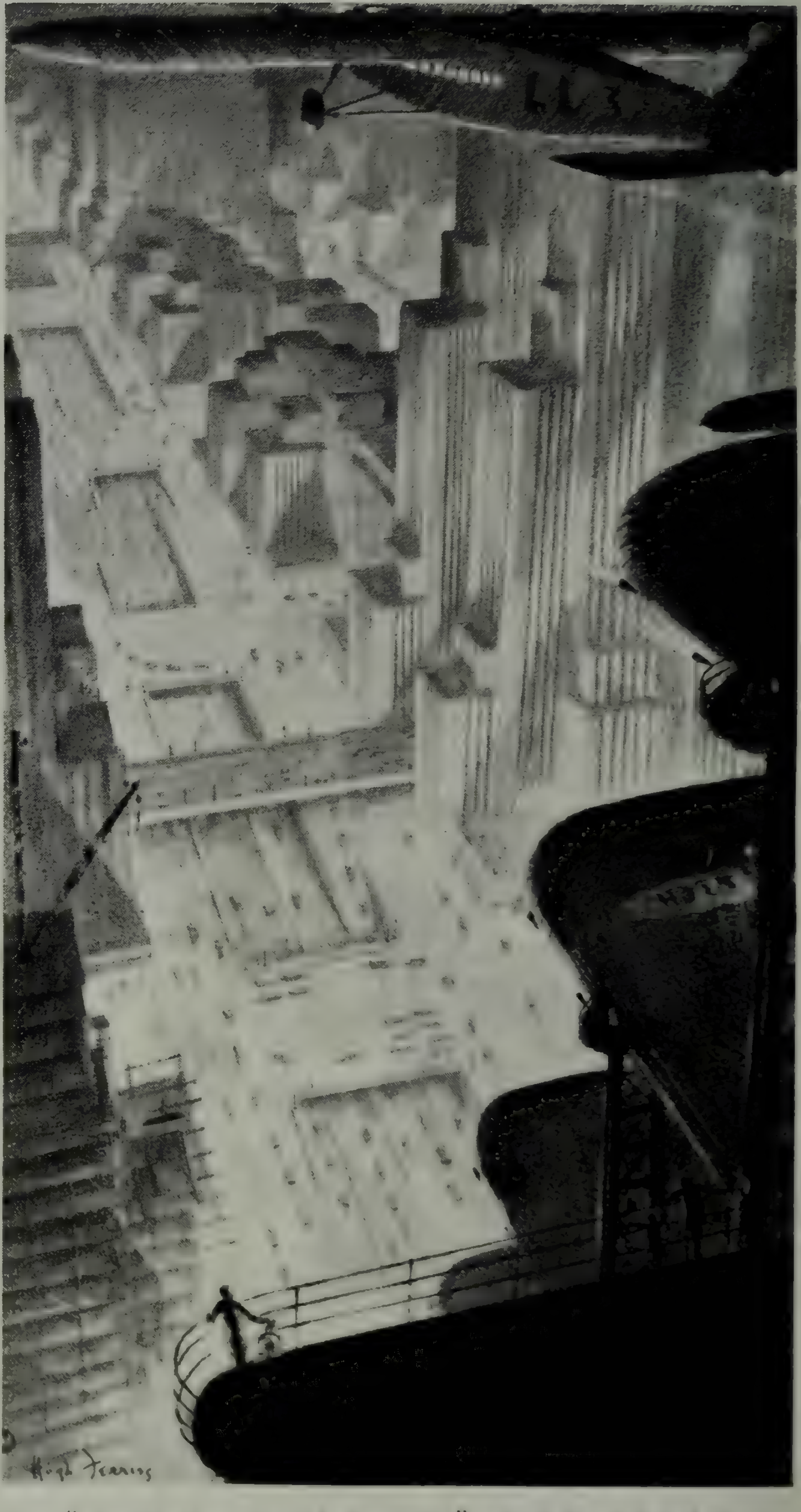

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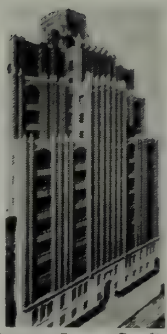

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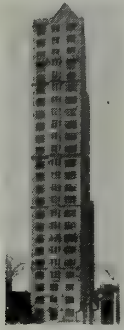

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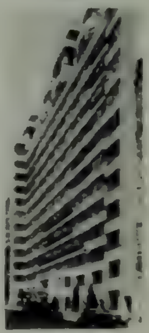

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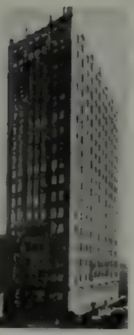
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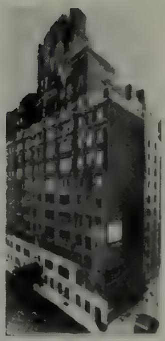
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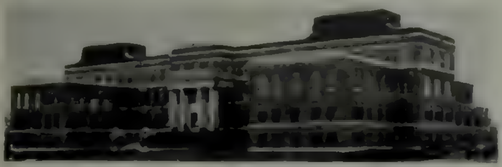
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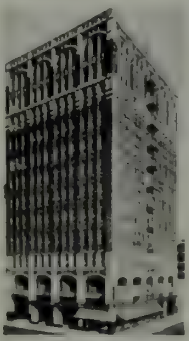
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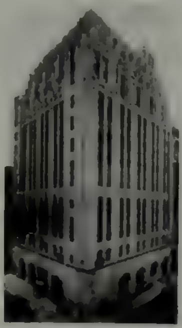
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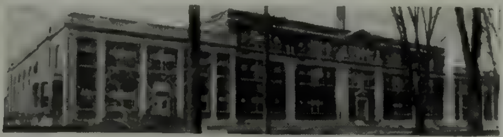
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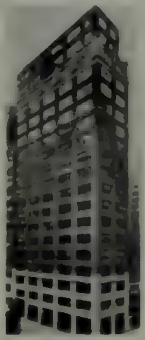
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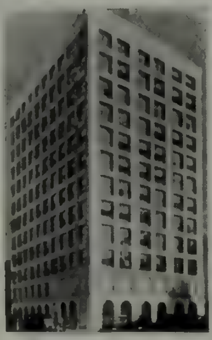
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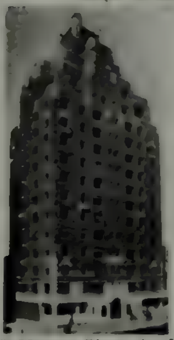
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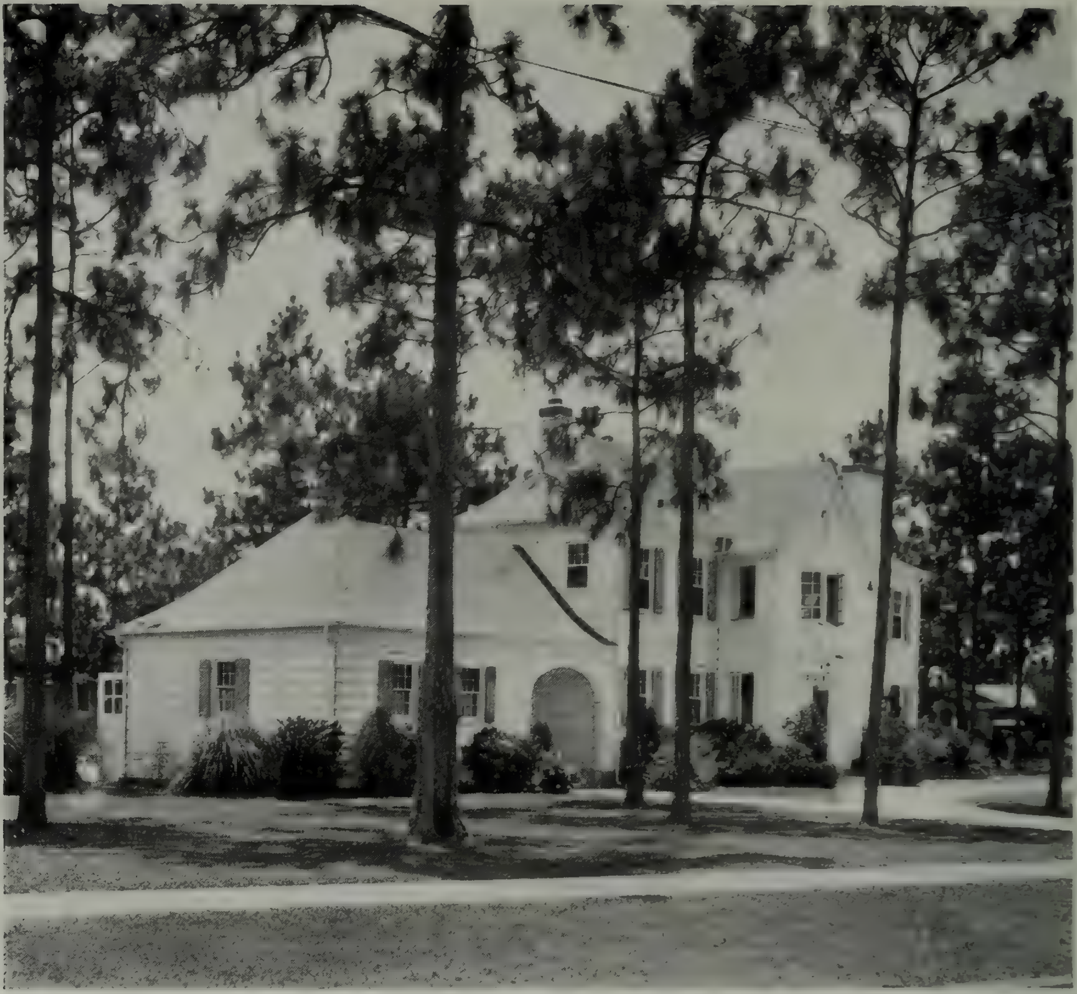

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James B. Newman
of the Firm of Ely Jacques Kahn
describes

"AN ENTRANCE OF DISTINCTION"

PHOTOGRAPH BY SIGURD FISCHER

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"The time of delivery was of vital importance, setting more than any other factor the opening date of the store. The entire inner and outer entrance metal work was installed by the General Bronze Company five days ahead of schedule, while at the same time their craftsmen were kept out of the way of the other trades."

The Metal on the Bonwit Teller Store Entrance is Nickel Silver
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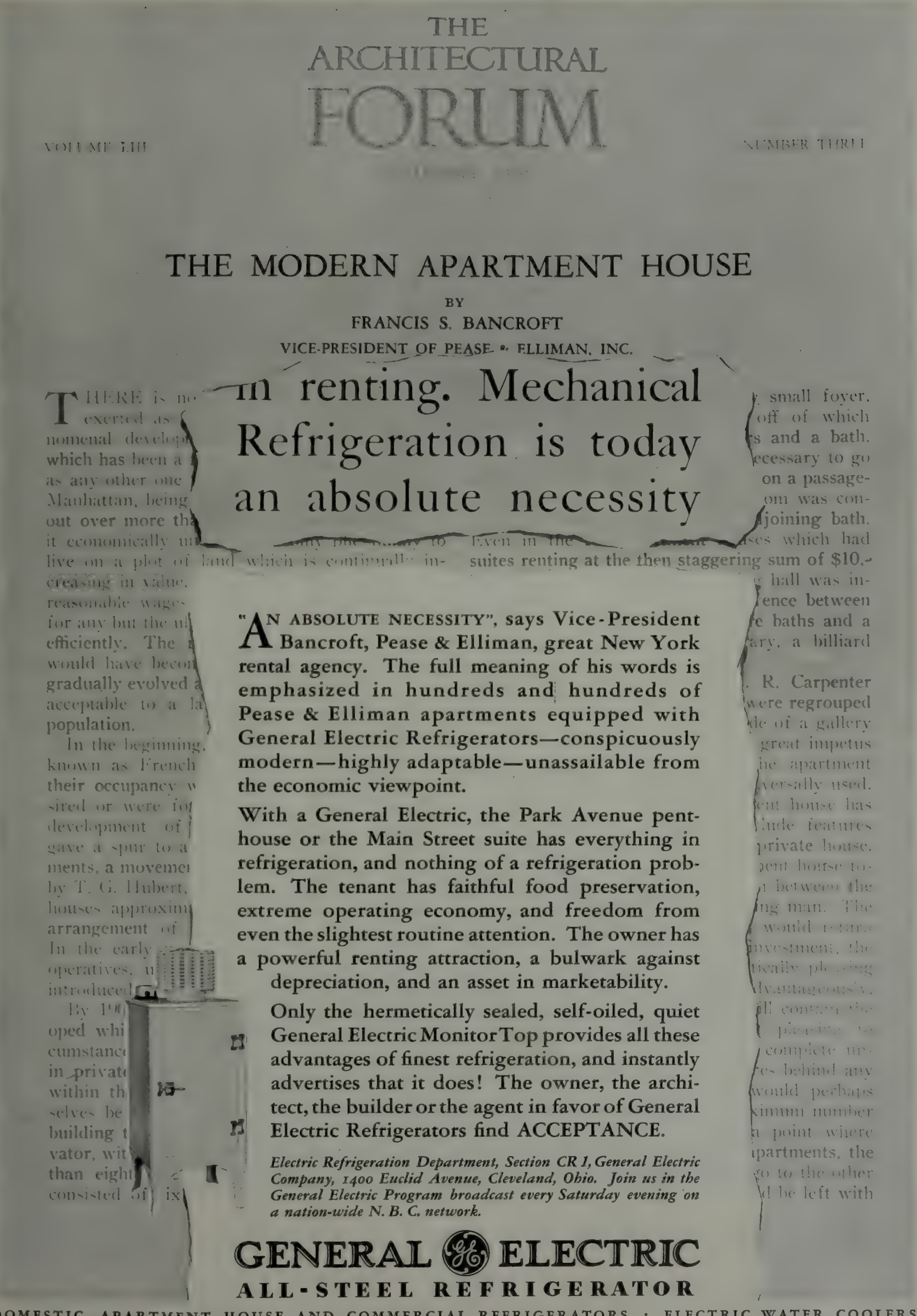

THE
ARCHITECTURAL
FORUM

VOLUME LIII NUMBER THREE

THE MODERN APARTMENT HOUSE

BY

FRANCIS S. BANCROFT

VICE-PRESIDENT OF PEASE & ELLIMAN, INC.

THERE is no
exerted as
nomenal develop
which has been a
as any other one
Manhattan, being
out over more th
it economically un
live on a plot of land which is continually in-
creasing in value.
reasonable wages
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gradually evolved a
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sired or were fo
development of
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selves be
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vator, wit
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suites renting at the then staggering sum of $10,-

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off of which
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ecessary to go
on a passage-
om was con-
joining bath.
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in renting. Mechanical Refrigeration is today an absolute necessity

"AN ABSOLUTE NECESSITY", says Vice-President Bancroft, Pease & Elliman, great New York rental agency. The full meaning of his words is emphasized in hundreds and hundreds of Pease & Elliman apartments equipped with General Electric Refrigerators—conspicuously modern—highly adaptable—unassailable from the economic viewpoint.

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Only the hermetically sealed, self-oiled, quiet General Electric Monitor Top provides all these advantages of finest refrigeration, and instantly advertises that it does! The owner, the architect, the builder or the agent in favor of General Electric Refrigerators find ACCEPTANCE.

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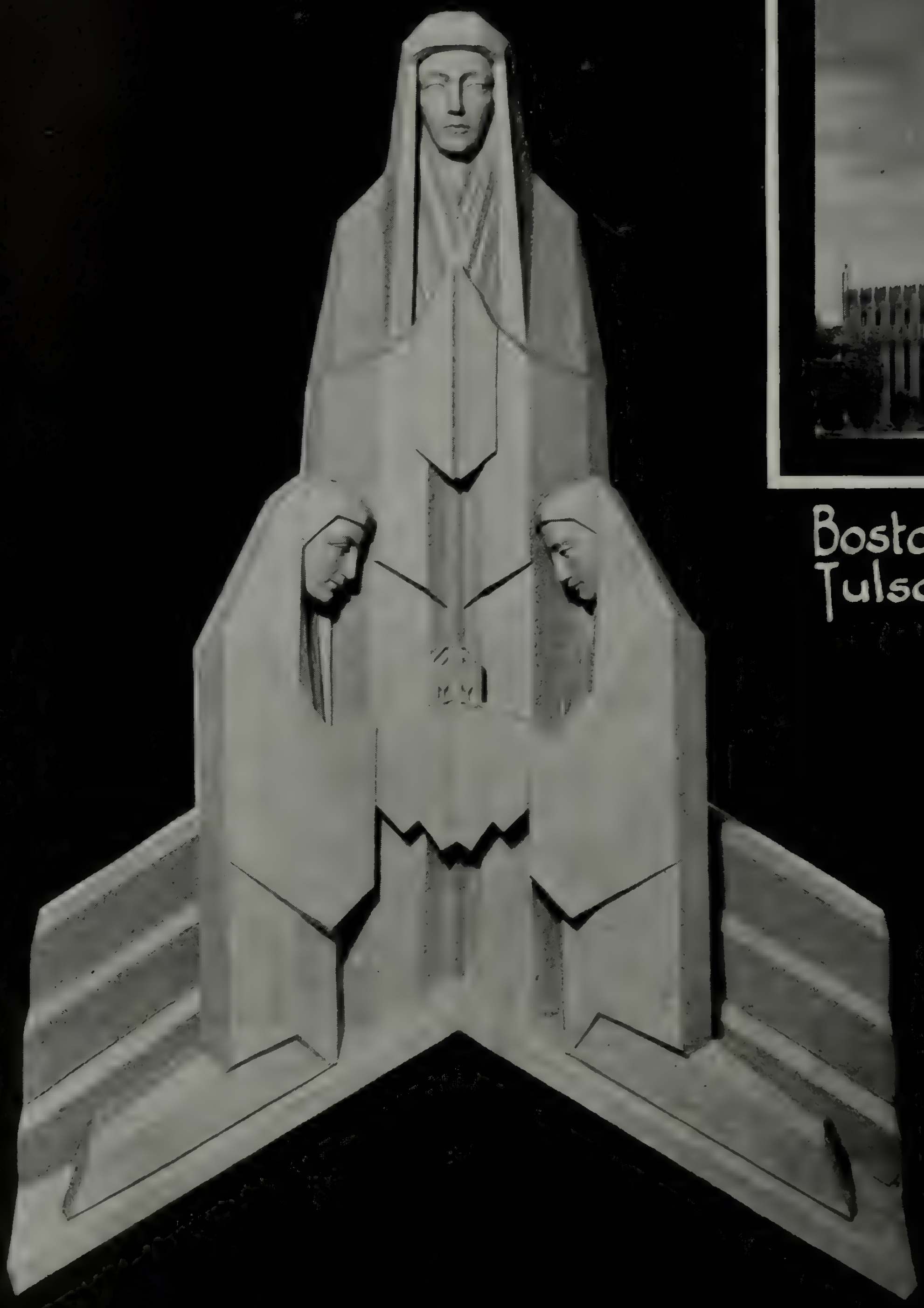

All the individual character of the architect's design, no matter how rhythmic the flow or modern the conception, can be faithfully reproduced in Northwestern Terra Cotta

THE NORTHWESTERN TERRA COTTA COMPANY

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THE
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SEDGWICK
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A RESIDENCE ELEVATOR

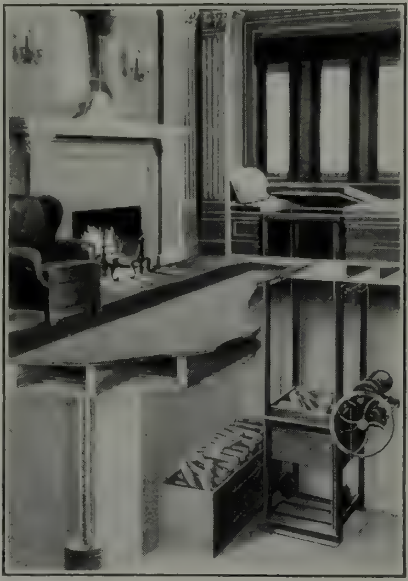
for those who should not or cannot climb stairs

THERE are many instances where an architect, when planning a new residence, must provide for some person who is unable to climb stairs, or who has been ordered by the doctor to avoid stair-climbing. The Sedgwick Individual Elevator exactly meets this condition. Its cost is moderate. It is easy to install, and requires very little space. It is so perfectly constructed as to be operated with the utmost ease, even by a child. Practically no maintenance or attention is required once the installation is completed. This Elevator can also be readily installed in an existing house.

And a SEDGWICK FUEL LIFT
for the Open Fireplace

MUCH of the charm and delight of an open fireplace is offset by the impractical manner in which fuel must be carried to it. The Sedgwick Fuel Lift overcomes this one great objection by bringing the fuel to a point close to the fireplace. It eliminates physical strain and the tracking of dirt through the house. There are numerous ways in which the lift can be installed without spoiling a carefully planned interior.

TWENTY-ONE standard types of Sedgwick Dumb Waiters, Lifts and Elevators are available for your vertical transportation needs. We have been cooperating with architects for more than 40 years and we welcome the opportunity to submit recommendations and specifications to meet specific requirements.



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SEDGWICK
Dumb Waiters - Elevators
FOR ALL PURPOSES

"Elementary, my dear Watson!"

"Even your limited intelligence and somewhat dunderheaded sense of aesthetics, Watson, should permit you to see that this interesting building—designed, I note, by an architect who smokes Russian cigarettes to excess and whose mother-in-law has Titian hair—has been spoilt by the use of inappropriate and variegated building stone." Holmes is right—he is *always* right. Architects who design in the modern style with vast wall expanses and sweeping vertical lines, are not using stone which is uneven in tint and tone—they specify one whose warm, creamy lightness is absolutely uniform. The greatest recommendation of Victor Select and Standard Buff Limestone is its uniform, creamy tone—there are no checkerboard variations in tint and color to camouflage structural lines and offsets, kill carving detail and reduce the effectiveness of modern architectural design. Furthermore, the supply of Victor Buff Limestone is virtually unlimited—an important point where the building of today will tomorrow be surrounded by others that must necessarily be in harmony with it.

Our Catalogue is filed in
Sweet's for 1931, Vol. A, page 618.

VICTOR OOLITIC STONE CO.
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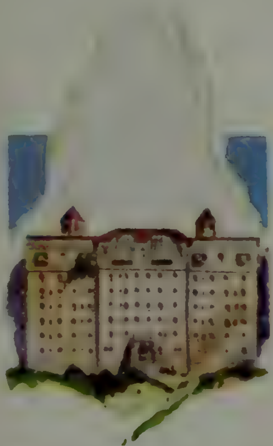
ART GLASS MAGIC

Touched by the mystic wand of Art in Glass, glaring light is transformed into soft hued, life-like mural decoration . . . .



Memorial window in the Deaconess Hospital, St. Louis. T. P. Barnett, St. Louis, architect. Windows by Jacoby Art Glass Studios, St. Louis.

Heretofore the colorful charm of tinted and opalescent glass has been largely confined to religious and semi-religious structures. But in recent years we find art glass unfolding its beauty in buildings of the more commercial type. And now that modern business is largely being transacted in truly artistic settings, leaded glass has come into its own.

The translucent lovliness of opalescent glass is used to replace, with colorful designs, dingy views from office windows. Opalescent glass transoms and skylights filter the glare from outside light while enhancing the richness of interior furnishings through their skillfully worked designs and decorations. Opalescent and tinted glass are media in which artists, craftsmen and architects can work together to achieve a harmony of design and color that, like an old masterpiece, remains forever new and good.

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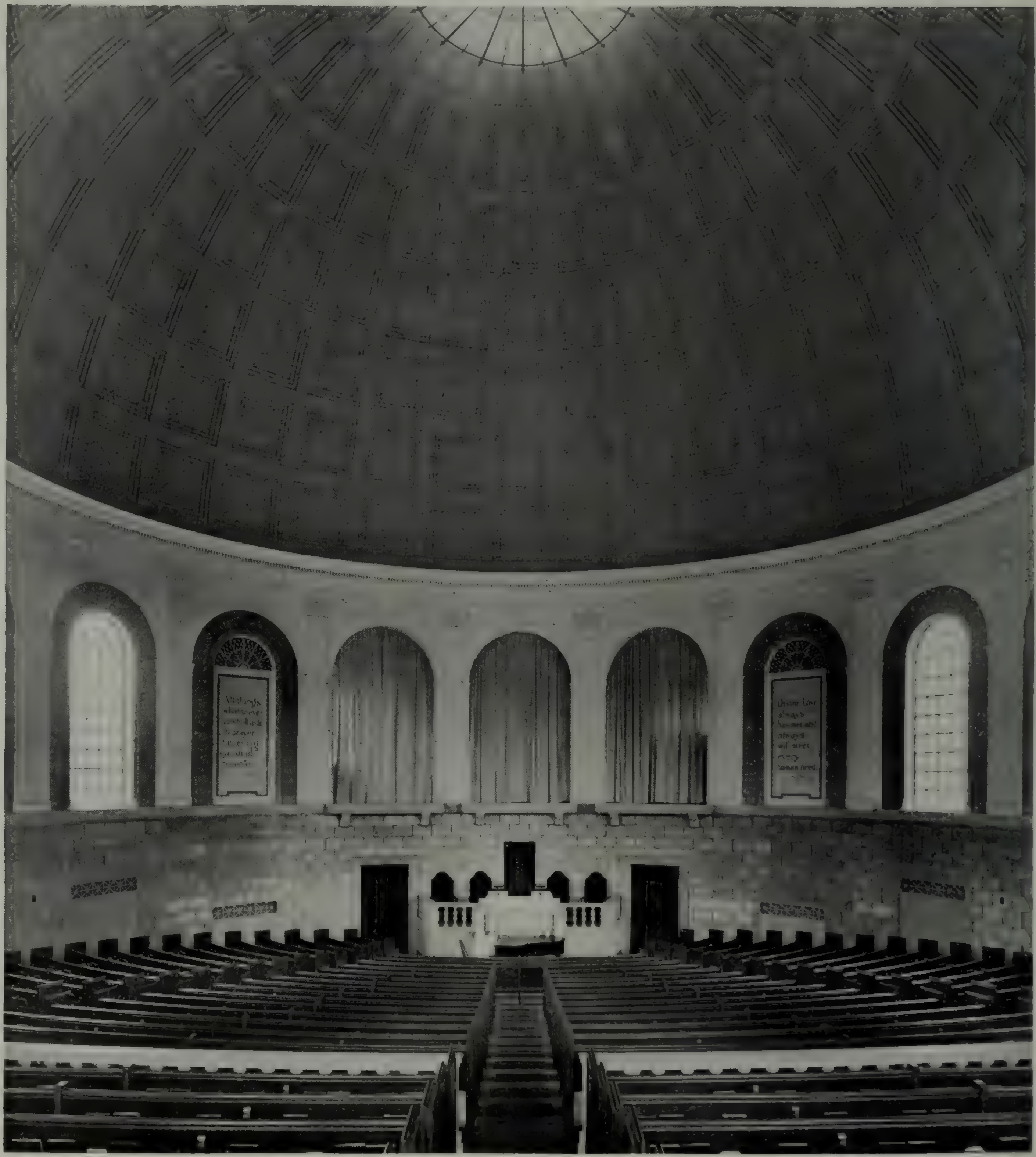
(PLAIN AND SEEDY IN CLEAR FLINTS AND TINTS)



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CAMBRIDGE, MASSACHUSETTS

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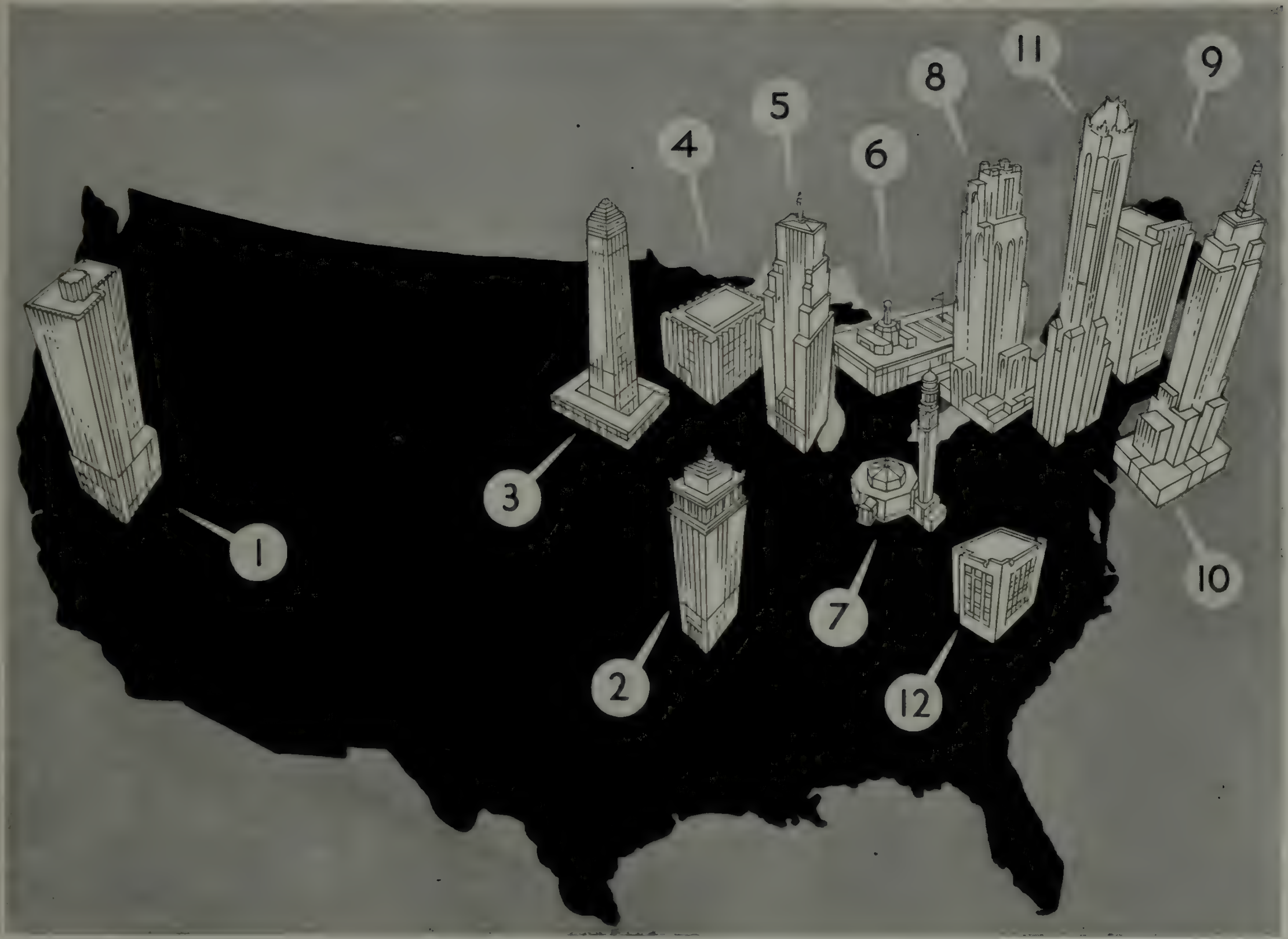


Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 1 How Prominent Architects have used Alcoa Aluminum in 48 Important Buildings

1 450 SUTTER BUILDING, San Francisco, California. Architect: Miller and Pflueger, San Francisco. General Contractor: Lindgren and Swinerton, Inc., San Francisco. Sub-contractor on aluminum work: Michel and Pfeffer Iron Works, San Francisco, California. ALCOA ALUMINUM used for elevator doors, entrances, grilles, directory board, lighting fixtures.

2 ST. LOUIS CIVIL COURT HOUSE, St. Louis, Missouri. Architect: Plaza Commission, Inc. Working under the direction of the Plaza Commission. Architects: George D. Barnett, Inc.; T. P. Barnett Company; Preston J. Bradshaw; Helfensteller, Hirsch and Watson; William B. Ittner; Klipstein and Rathmann; LaBeaume and Klein; Mauran, Russel and Crowell. Engineers: Brussel and Viterbo; Frederick C. Taxis. ALCOA ALUMINUM used for sheet roofing, fascia, decorative sphinxes, conduit.

3 FOSHAY TOWER, Minneapolis, Minn. Architect: Magney and Tusler, Inc., Minneapolis. General Contractor: National Contracting Company, Minneapolis. Sub-contractor on aluminum work: Crown Iron Works Company, Minneapolis. ALCOA ALUMINUM used for guard rail and ladder rungs.

4 A. O. SMITH CORPORATION, Engineering and Research Laboratory, Milwaukee, Wisconsin. Architect: Holabird and Root, Chicago, Illinois. General Contractor: Wisconsin Bridge and Iron Company; A. O. Smith Corporation, Milwaukee. Sub-contractor on aluminum work: Super Steel Products Company, Milwaukee. ALCOA ALUMINUM used for windows, cornice, coping, pilasters, plynth blocks.

5 CHICAGO BOARD OF TRADE BUILDING, Chicago, Illinois. Architect: Holabird and Root, Chicago. General Contractor: Hegeman-Harris Company, Inc., Chicago. Sub-contractor on aluminum work: Shean Steel Window Company, Chicago; Gorham Manufacturing Company, Providence, R. I. ALCOA ALUMINUM used for batten seam roof, sliding sash on promenade deck, gutters, smoke hood and statue.

6 WAYNE COUNTY AIRPORT, Detroit, Michigan. Architect: Giffels and Vallet, Inc., Detroit. General Contractor: Gallagher and Flemming, Detroit. Sub-contractor on aluminum work: Anchor Steel Engineering Company. ALCOA ALUMINUM used for spandrels, cornice and light fixtures.

7 FIRST CHURCH OF CHRIST SCIENTIST, Cleveland, Ohio. Architect: Walker and Weeks, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractors on aluminum work: Industrial Asbestos Company and The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for sheet roof, cast ornamental bells, tower dome and finial.

8 CATHEDRAL OF LEARNING, Pittsburgh, Pennsylvania. Architect: Chas. L. Klauder, Philadelphia. General Contractor: Stone and Webster, Pittsburgh and New York. Sub-contractor on aluminum work: Stone and Webster, Pittsburgh and New York. ALCOA ALUMINUM used for spandrels.

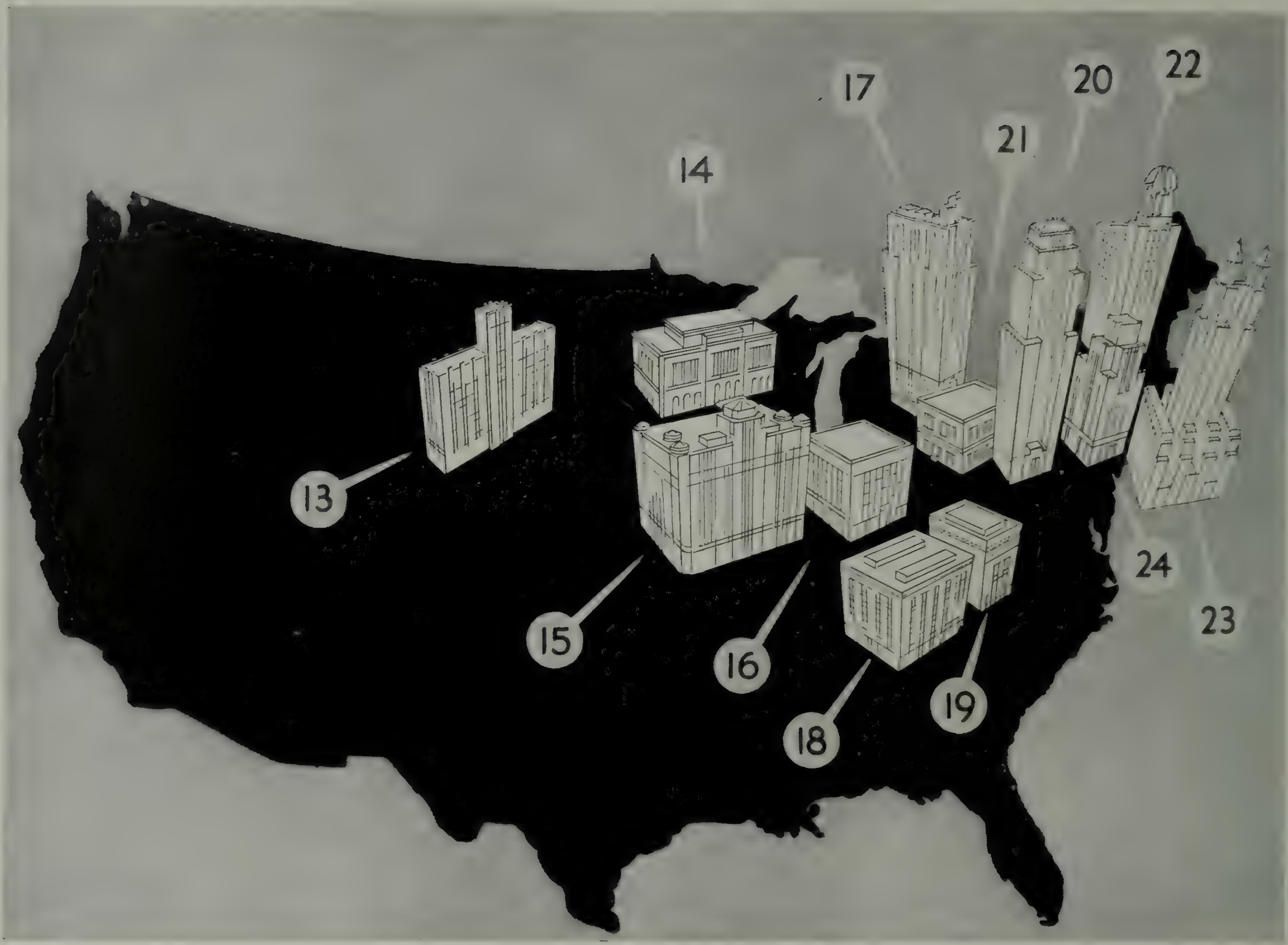
9 EDISON ELECTRIC ILLUMINATING COMPANY BUILDING, Boston, Massachusetts. Architect: Bigelow, Wadsworth, Hubbard and Smith, Boston. General Contractor: W. A. and H. A. Root, Boston. Sub-contractor on aluminum work: A. L. Smith Iron Works, Chelsea, Mass. ALCOA ALUMINUM used for spandrels.

10 EMPIRE STATE BUILDING, New York City, N. Y. Architect: Shreve, Lamb and Harmon, New York. General Contractor: Starrett Brothers & Eken, Inc., New York. Sub-contractors on aluminum work: C. E. Halback and Company, Brooklyn, N. Y.; Wm. H. Jackson Co., Brooklyn, N. Y.; General Bronze Corporation, Long Island City; W. S. Tyler Company, Cleveland, Ohio. ALCOA ALUMINUM used for store fronts, spandrels, moldings, elevator doors and trim, mooring mast sheathed with aluminum, wings cast in aluminum.

11 RADIO VICTOR BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General Contractor: A. L. Hartridge Company, Inc., New York. Sub-contractors on aluminum work: Atlas Iron Works, New York; Wm. H. Jackson Co., Brooklyn, N. Y. ALCOA ALUMINUM used for window sills, decorative metal work in lobby, exterior ornamental metal work.

12 SOUTHERN BELL TELEPHONE AND TELEGRAPH BUILDING, Greensboro, North Carolina. Architect: Marye, Alger and Vinour, Atlanta, Georgia. General Contractor: Barge-Thompson Company, Atlanta. Sub-contractor on aluminum work: Price Evans Foundry Corporation, Chattanooga, Tennessee. ALCOA ALUMINUM used for spandrels.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 2

They commanded a metal that lent itself readily to architectural design and fine detail

13 CREIGHTON UNIVERSITY, Omaha, Nebraska. Architect: Leo A. Daly, Omaha. General Contractor: A. Borchman and Son, Omaha. Sub-contractor on aluminum work: Kraus and Trustin, Omaha. ALCOA ALUMINUM used for spandrels.

14 MILWAUKEE COUNTY COURT HOUSE, Milwaukee, Wisconsin. Architect: Albert Randolph Ross, Milwaukee. General Contractor: Capitol Ornamental Iron Works, Rockford, Illinois. ALCOA ALUMINUM used for grille work.

15 MERCHANDISE MART BUILDING, Chicago, Illinois. Architect: Graham, Anderson, Probst and White, Chicago, Illinois. General Contractor: John Griffiths and Son Company, Chicago. Sub-contractors on aluminum work: Hansell-Elcock Company, Chicago; A. S. Schulman Electric Company, Chicago. ALCOA ALUMINUM used for light brackets, miscellaneous extruded moldings and castings.

16 HOWARD AVENUE TRUST AND SAVINGS BANK BUILDING, Chicago, Illinois. Architect: Jens J. Jensen, Chicago. General contractor: Wm. G. McNulty and Brothers, Chicago. Sub-contractors on aluminum work: The E. M. Weymer Company, Inc., Chicago; American Iron and Wire Works, Chicago. ALCOA ALUMINUM used for inscription panels and plaques, entrance grilles, vestibule grilles, lobby door frames and grilles, mail boxes, balcony railing, check desks, desk light fixtures, calendar frames, wickets for bank tellers, vault screen, gate to banking enclosure, etc.

17 UNION INDUSTRIAL BANK BUILDING, Flint, Michigan. Architect: Smith, Hinchman and Grylls, Detroit, Michigan. General Contractor: Realty Construction Company, Flint. Sub-contractor on aluminum work: General Bronze Corporation, New York. ALCOA ALUMINUM used for spandrels, banking room windows, name plates, store fronts, street letters, grilles, flag pole base, stair and balcony railings.

18 WARNER BROTHERS PICTURES, Inc., Cleveland, Ohio. Architect: J. Milton Dyer, Cleveland. General Contractor: Hunkin-Conkey Company, Cleveland. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for spandrels, store fronts, entrances, elevator doors, grilles, lobby trim, etc.

19 GUARDIAN BANK BUILDING, Cleveland, Ohio. Architect: H. W. Johnson, Cleveland. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for store fronts, doors, bank screens, check tables and spandrels.

20 KOPPERS BUILDING, Pittsburgh, Pennsylvania. Architect: Graham, Anderson, Probst and White, Chicago, Illinois. General Contractor: Mellon Stuart Company, Pittsburgh; Rust Engineering Company, Pittsburgh. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh. ALCOA ALUMINUM used for spandrels and elevator cab doors.

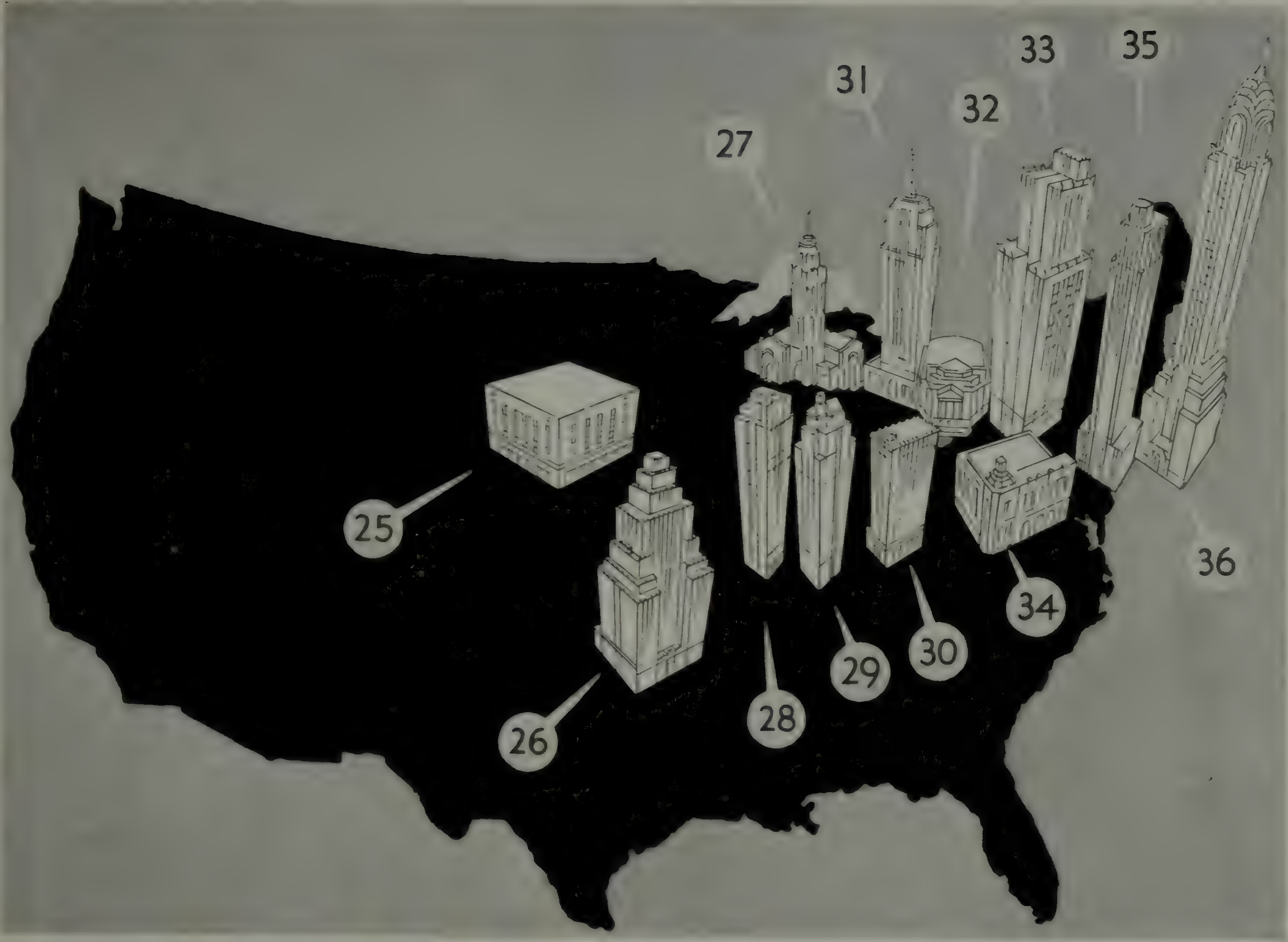
21 GULF RESEARCH BUILDING, Pittsburgh, Pennsylvania. Architect: Schwab, Palmgreen and Merrick, Pittsburgh. General Contractor: Mellon Stuart, Pittsburgh. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh. ALCOA ALUMINUM used for spandrels, mullions, doors and flashing.

22 GENESEE VALLEY TRUST BUILDING, Rochester, New York. Architect: Voorhees, Gmelin, and Walker, New York. General Contractor: A. Frederick and Sons Company, Rochester. Sub-contractor on aluminum work: Francis Metal Door and Window Corporation. ALCOA ALUMINUM used for bank room windows, spandrels, grilles, wings, mullions, light reflectors.

23 WALDORF ASTORIA HOTEL, New York City, N. Y. Architect: Schultze and Weaver, New York. General Contractor: Thompson-Starrett Company. Sub-contractor for aluminum work, General Bronze Corporation, Long Island City, N. Y. ALCOA ALUMINUM used for spandrels.

24 HERSH TOWER, Elizabeth, New Jersey. Architect: Myers and Shanley, Newark, New Jersey. General Contractor: Turner Construction Company, New York City. Sub-contractors on aluminum work: General Bronze Corporation, New York City, Del Turco and Brothers, Inc., Harrison, New Jersey (Terrazzo). ALCOA ALUMINUM used for spandrels, sills, sash, grilles, mullions, store fronts, screens, beltline, entrance vestibule, lobby, elevator doors, lighting fixtures, gutters, terrazzo strips, pilasters.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 3

They secured permanence—saved handling unnecessary weight—cut cost of erection

25 FAIDLEY BUILDING, Omaha, Nebraska. Architect: McDonald and McDonald, Omaha. General Contractor: A. H. Brodkey Company, Omaha. Sub-contractor on aluminum work: Kraus and Trustin, Omaha. ALCOA ALUMINUM used for spandrels, store fronts, mullions.

26 PARK PLAZA HOTEL, St. Louis, Missouri. Architect: Bauman and Schopp, St. Louis. General Contractor: Koplar Construction Company, St. Louis. Sub-contractor on aluminum work: Usona Mfg. Company, St. Louis. ALCOA ALUMINUM used for radiators, supplied by the Thermal Unit Heating Company, Chicago; elevator doors, furnished by the Dahlstrom Metallic Door Company; moulding, stair rails

27 ST. SEBASTIAN CHURCH, Milwaukee, Wisconsin. Architect: Herbst and Kuenzli, Milwaukee. General Contractor: Edward Steigerwald and Sons, Inc., Milwaukee. Sub-contractor on aluminum work: Jos. Romberger Sheet Metal Works, Milwaukee. ALCOA ALUMINUM used for roof, gutters and down-spouts.

28 1242 LAKE SHORE DRIVE APARTMENT BUILDING, Chicago, Illinois. Architect: Robert S. DeGolyer and Company, Chicago. General Contractor: Turner Construction Company, Chicago. Sub-contractor on aluminum work: Kohl and Vick Iron Works, Chicago. ALCOA ALUMINUM used for spandrels, balconies, window jambs and sills.

29 DRAKE TOWERS, Lake Shore Drive, Michigan Avenue, Chicago, Illinois. Architect: Benjamin H. Marshall, Chicago. General Contractor: Benjamin H. Marshall, Construction Department. Roofing and sheet metal construction, Advance Roofing and Sheet Metal Works, Inc. ALCOA ALUMINUM used for shingles.

30 CENTRAL UNION BANK BUILDING, Evansville, Indiana. Architect: McGuire and Shook, Indianapolis, Indiana. Associate Architect: Walker and Weeks, Cleveland. General Contractor: M. J. Hoffman Construction Company, Evansville, Indiana and Detroit, Michigan. Sub-contractor on aluminum work: International Steel and Iron Company, Evansville, Indiana. ALCOA ALUMINUM used for spandrels and window sills.

31 OLD MERCHANTS NATIONAL BANK AND TRUST COMPANY BUILDING, Battle Creek, Michigan. Architect:Weary and Alford, Chicago, Illinois. General Contractor: Walbridge and Aldinger, Detroit, Michigan. Subcontractor on aluminum work: General Bronze Corporation, New York City, N. Y. ALCOA ALUMINUM used for spandrels, grilles, main entrance, mullions.

32 SEVERANCE HALL, Cleveland, Ohio. Architect: Walker and Weeks, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractors on aluminum work: Industrial Asbestos Company, Cleveland; The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for roof, doors, marquise, stair case, terrazzo strips, grilles, panels, etc.

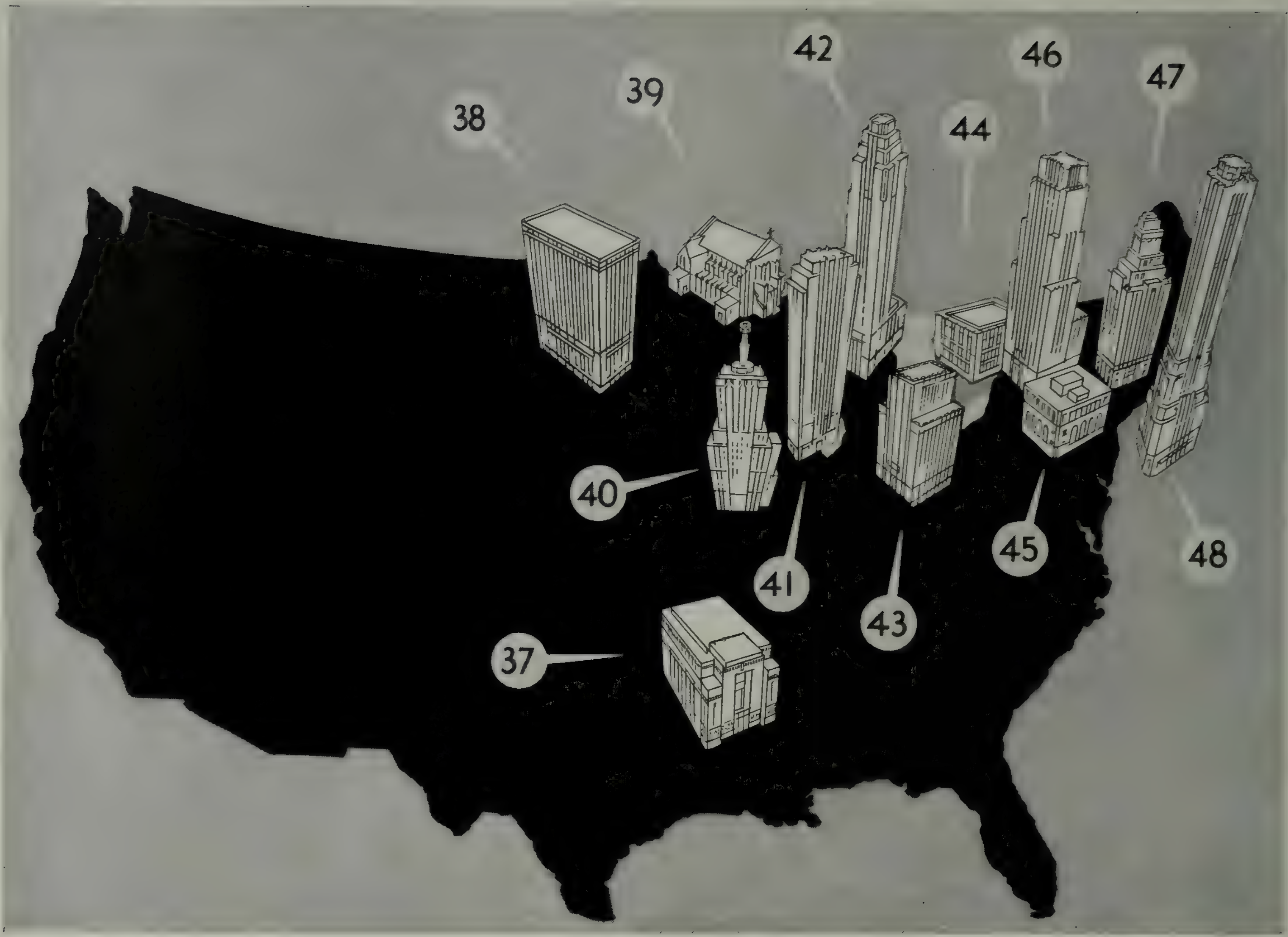
33 GRANT BUILDING, Pittsburgh, Pennsylvania. Architect: Henry Hornbostel, Pittsburgh. General Contractor: Thompson-Starrett Company, Pittsburgh, Pennsylvania and New York City, N. Y. ALCOA ALUMINUM used for spandrels, guard rail, sheet roof on pent house.

34 MT. LEBANON MUNICIPAL BUILDING, Mt. Lebanon, Pennsylvania. Architect: Wm. H. King, Jr., Pittsburgh. General Contractor: H. S. Miller and Son, Pittsburgh. Sub-contractor on aluminum work: Star Ornamental Iron Company, Pittsburgh. ALCOA ALUMINUM used for roofing, flashing, skylights, spandrels, stair and balcony railings, entrance hardware.

35 1616 WALNUT STREET BUILDING, Philadelphia, Pennsylvania. Architect: Tilden, Register and Pepper, Philadelphia. General Contractor: Wark and Company. Subcontractor on aluminum work: General Bronze Corporation, New York. ALCOA ALUMINUM used for spandrels and interior lobby.

36 CHRYSLER BUILDING, New York City, N. Y. Architect: Wm. Van Alen, New York. General Contractor: Fred T. Ley and Company, Inc., New York. Sub-contractors on aluminum work: Sexauer & Lemke, Inc., Long Island City; Benjamin Reisner, Inc., New York City; Abbot and Ney Co., Inc., New York City, N. Y. ALCOA ALUMINUM used for spandrels, window sills, flag pole base, door saddles, louvres, window ventilators, parapet hand rail, coping panels, roof drains and leader outlets.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 4

They used a metal that does not require surface protection...is free from corrosion... does not streak adjoining surfaces

37 UNION TRUST BUILDING, Little Rock, Arkansas. Architect: Thompson, Sanders and Ginocchio, Little Rock. General Contractor: International Casement Company, Jamestown, New York. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh, Pennsylvania. ALCOA ALUMINUM used for spandrels, grilles, mullions and jambs.

38 NORTHWESTERN BANK BUILDING, Minneapolis, Minnesota. Architect: Graham, Anderson, Probst and White, Chicago, Ill. General Contractor: Charles Haglin and Sons Company, Minneapolis. Sub-contractor on aluminum work: General Bronze Corporation, Minneapolis. ALCOA ALUMINUM used for spandrels.

39 HOLY GHOST CHURCH, Milwaukee, Wisconsin. Architect: Eschweiler and Eschweiler, Milwaukee. General Contractor: Czaplewski Brothers, Inc., Milwaukee. Sub-contractor on aluminum work: Biersach and Niedermeyer, Milwaukee. ALCOA ALUMINUM used for roof, gutters and down-spouts.

40 LINDBERGH BEACON TOWER, PALMOLIVE BUILDING, Chicago, Illinois. Architect: Holabird and Root, Chicago. General Contractor: Lundoff-Bicknell Company, Chicago. Sub-contractor on aluminum work: Gorham Manufacturing Company, Providence, Rhode Island. ALCOA ALUMINUM used for tower, structural steel encased in aluminum extruded members, projector housing.

41 430 NO. MICHIGAN BLVD. BUILDING, Chicago, Illinois. Architect: Loebl, Schlossman and Demuth, Chicago. General Contractor: Lundoff-Bicknell, Chicago. Sub-contractor on aluminum work: The American Architectural Iron Works, Chicago; Paltridge Metal Equipment Company, Chicago; E. M. Weymer Company, Chicago. ALCOA ALUMINUM used for lobby and entrance vestibule grilles and ornaments, elevator doors, door and transom frames.

42 CENTRAL NATIONAL TOWER, Battle Creek, Michigan. Architect: Holabird and Root, Chicago, Illinois. General Contractor: Lundoff-Bicknell Company, Chicago. ALCOA ALUMINUM used for flashing, louvres, screens, metal decks and ventilators.

43 THE OHIO BELL TELEPHONE COMPANY, Dayton, Ohio. Architect: Schenck and Williams, Dayton. General Contractor: H. R. Blagg Company, Dayton. Sub-contractors on aluminum work: General Bronze Corporation, Minneapolis, Minnesota; Van Kannel Revolving Door Company, New York; Cutler Mail Chute Company, New York; Campbell Metal Window Corporation, Baltimore, Maryland; Dayton Stencil Works, Dayton; Edward Meyer and Company, Cincinnati, Ohio. ALCOA ALUMINUM used for spandrels, grilles, store fronts, entrance doors to main building and stores, revolving doors, elevator doors, windows, ventilating ducts, louvres, mail chutes, directory board.

44 MICHIGAN DIAMOND EXCHANGE BUILDING (Ohio Bell Telephone Company), Cleveland, Ohio. Architect: Hadlow, Hughes, Hick, and Conrad, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractor on aluminum work: Kilroy Structural Steel Company, Cleveland. ALCOA ALUMINUM used for spandrels, window sills, grilles, foyer fence and gate, entrance doors.

45 COUNTY OFFICE BUILDING, Pittsburgh, Pennsylvania. Architect: Stanley Roush, Pittsburgh. General Contractor: S. M. Siesal Company, Pittsburgh, Pennsylvania and Milwaukee, Wisconsin. Sub-contractor on aluminum work: General Bronze Corporation, New York City. ALCOA ALUMINUM used for windows, thresholds, kick plates, mop strips.

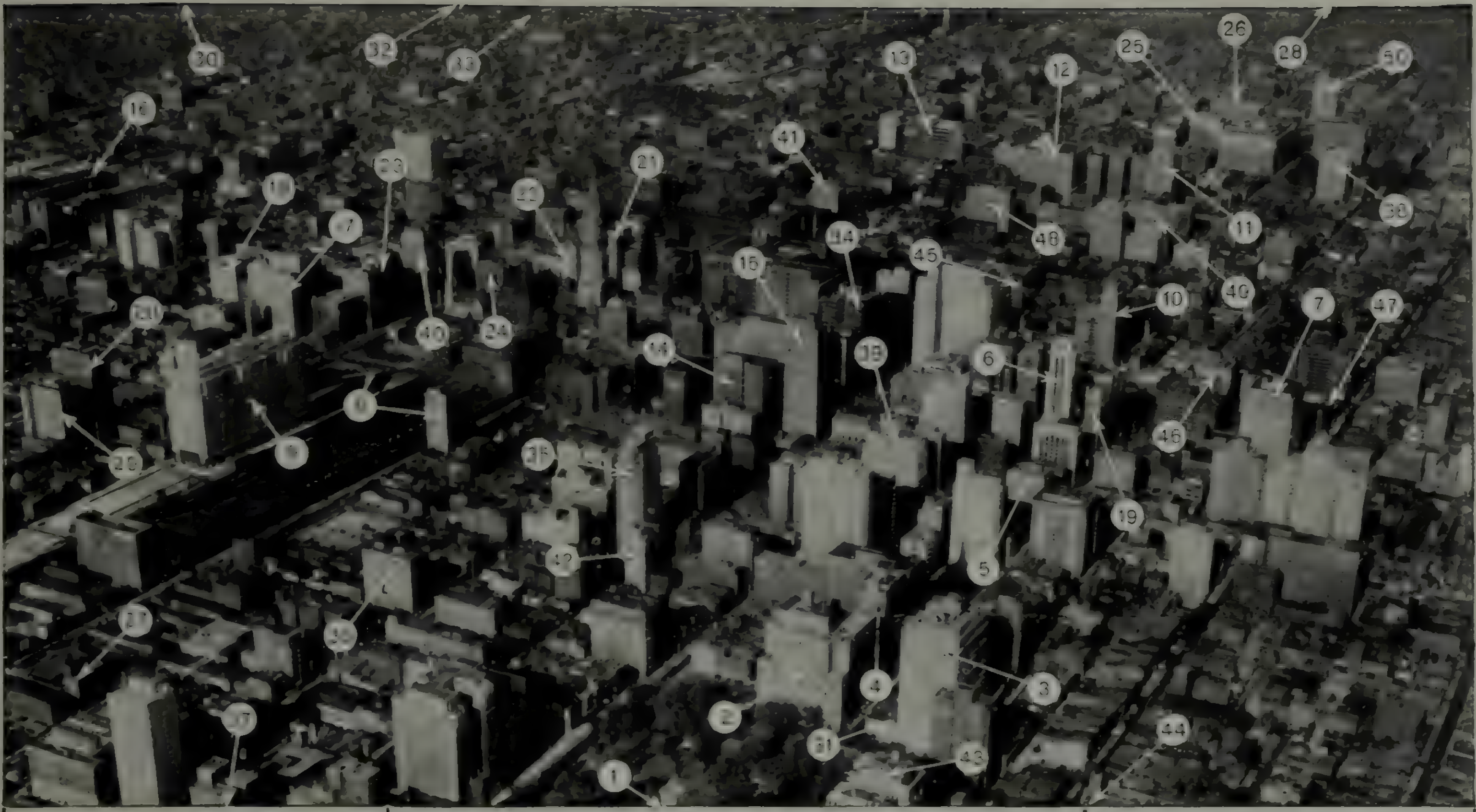
46 CENTRAL DEPOSITORS BANK, Akron, Ohio. Architect: Walker and Weeks, Cleveland, Ohio. General Contractor: Carmicheal Construction Company, Akron. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland, Ohio. ALCOA ALUMINUM used for store fronts, entrance and lobby doors, grilles, terrazzo strips, bank screens, check tables, stair railing, etc.

47 NEW YORK TRUST BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General Contractor: Thompson-Starrett Company, New York. Sub-contractors on aluminum work: Reliance Bronze and Steel Company, New York; Campbell Metal Window Corp., New York; The Long Island Wire Works, Inc., Brooklyn, N. Y. ALCOA ALUMINUM used for double hung windows, revolving doors, banking room windows, elevator cabs and doors, directory board, grilles, counter screens, desks, and cage work.

48 CITY BANK-FARMERS TRUST BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General contractor: George A. Fuller Company, New York. Sub-contractors on aluminum work: C. E. Halback Company, Brooklyn, New York; Sexauer & Lemke, Long Island City; Richey Browne & Donald, Inc., Maspeth, L. I. ALCOA ALUMINUM used for spandrels, casement windows, window sills, hand rails and bridge.

Our nearest office will gladly send a representative to talk with you about the architectural uses of ALCOA ALUMINUM. ALUMINUM COMPANY of AMERICA; 2467 Oliver Bldg., PITTSBURGH, PA.

ALCOA ALUMINUM



Airplane photo of Philadelphia's business section.

These Philadelphia buildings are Jennings equipped.

1. Chateau Crillon, 19th & Locust Sts.
   1 Duplex Jennings Vacuum Heating Pump
2. Penn Athletic Club
   1 Duplex Jennings Vacuum Heating Pump
3. Barclay Apartments
   1 Duplex Jennings Vacuum Heating Pump
   2 Jennings Condensation Pumps and Receivers
   1 Duplex Sewage Ejector
4. Warwick Hotel
   1 Duplex Jennings Vacuum Heating Pump
5. Gulf Refining Building
   1 Duplex Jennings Vacuum Heating Pump
6. Lewis Building
   2 Duplex Jennings Vacuum Heating Pumps
7. Atlantic Refining Bldg.
   1 Duplex Jennings Vacuum Heating Pump
8. Fox Theatre Building
   1 Duplex Jennings Vacuum Heating Pump
9. Pennsylvania RR., Broad Street Station and other buildings
   3 Duplex Jennings Vacuum Heating Pumps
   2 Duplex Jennings Condensation Pumps
   1 Single Jennings Vacuum Heating Pump
   1 Jennings Suction Sump Pump
   2 Jennings Centrifugal Pumps
10. Chancellor Court Apartments
   1 Duplex Jennings Vacuum Heating Pump
12. Phila. Elec. Bldg. (Edison Bldg.)
   1 Duplex Jennings Vacuum Heating Pump
2. Gimbel Brothers
   1 Duplex Jennings Vacuum Heating Pump
13. Strawbridge and Clothier
   5 Duplex Jennings Vacuum Heating Pumps
   1 Single Jennings Sewage Ejector
14. Franklin National Bank Bldg.
   1 Duplex Jennings Vacuum Heating Pump
15. Packard Building
   1 Duplex Jennings Vacuum Heating Pump
16. New Terminal Commerce Bldg. Reading Railroad
   1 Single Jennings Vacuum Heating Pump
   3 Jennings Centrifugal Pumps
17. Y. M. C. A. Naval Annex
   1 Duplex Jennings Sewage Ejector
   2 Jennings Suction Sump Pumps
18. Hahnemann Hospital
   1 Triplex Jennings Sewage Ejector
   2 Jennings Suction Sump Pumps
19. Mitten Building
   1 Duplex Jennings Vacuum Heating Pump
20. Bell Telephone Company
   1 Duplex Jennings Vacuum Heating Pump
21. City Hall Annex
   1 Duplex Jennings Vacuum Heating Pump
22. Bulletin Bldg.
   1 Jennings Vacuum Heating Pump
   1 Duplex Jennings Vacuum Heating Pump

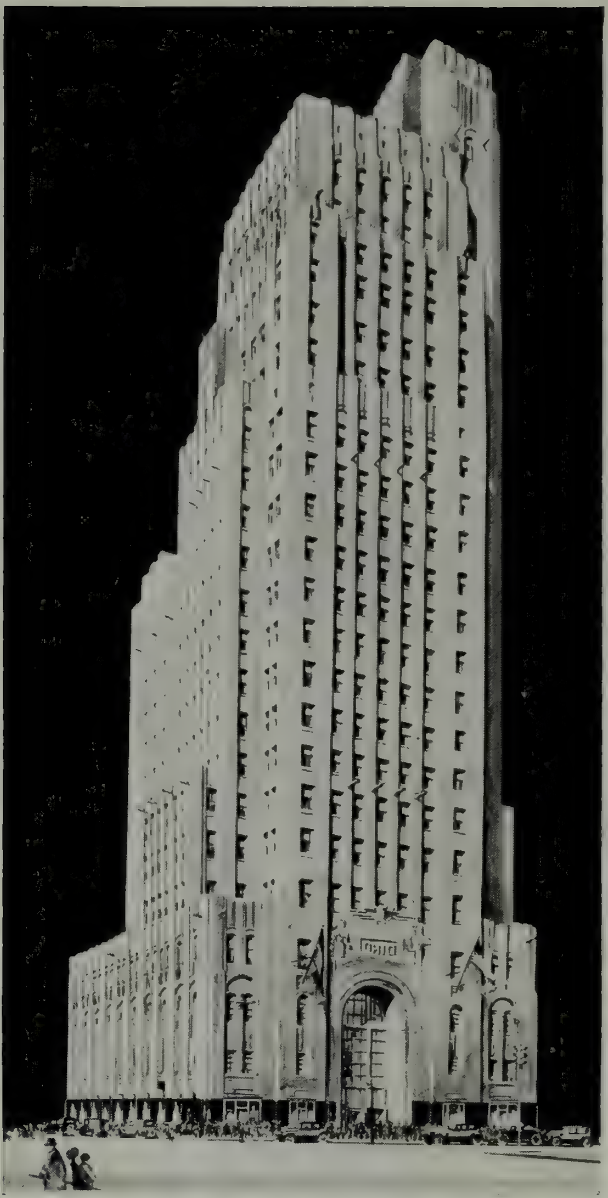
Serving these Philadelphia buildings

In fifty important buildings in Philadelphia's business section, the heating systems are served by Jennings Vacuum Heating Pumps. Other Jennings Equipment installed in these buildings includes House Service Pumps, Condensation Pumps, Sump Pumps and Pneumatic Sewage Ejectors.

Philadelphia architects, engineers and building owners know that Jennings Pumps can be depended upon to give long, efficient service with a minimum of attention. Nash Engineering Company 13 Wilson Road, South Norwalk, Conn.

Jennings
Pumps

23. U. G. I. Building
   1 Jennings Vacuum Heating Pump
   1 Duplex Jennings Sewage Ejector
   1 Duplex Jennings Vacuum Heating Pump
24. Bulletin Annex
   1 Jennings Vacuum Heating Pump
25. Public Ledger Building
   2 Jennings Vacuum Heating Pumps
26. Independence Hall
   1 Single Jennings Vacuum Heating Pump
27. Stanley Theatre
   1 Single Jennings Vacuum Heating Pump
28. R-C-A Victor Corporation
   2 Jennings Condensation Pumps and Receivers
   1 Duplex Jennings Vacuum Heating Pump
29. Robert Morris Hotel
   1 Duplex Jennings Vacuum Heating Pump
30. Schmidt's Brewery
   1 Jennings Vacuum Heating Pump
31. Curtis Institute of Music
   2 Duplex Jennings Vacuum Heating Pumps
32. Philadelphia Electric Co. Sta.
   1 Duplex Jennings Vacuum Heating Pump
33. Pennsylvania Sugar Company
   4 Nash Hytor Compressors
   1 Nash Hytor Vacuum Pump
34. Land Title Building
   2 Jennings Air Line Pumps
35. Architects Building
   1 Jennings Vacuum Heating Pump
36. Central Medical Building
   1 Duplex Jennings Vacuum Heating Pump
37. Warburton House
   1 Duplex Jennings Sewage Ejector
38. Farm Journal Building
   1 Duplex Jennings Vacuum Heating Pump
39. 1600 Walnut Street Building
   1 Single Jennings Vacuum Heating Pump
40. Liberty Title & Trust Company
   1 Duplex Jennings Vacuum Heating Pump
41. Frank & Seder
   1 Duplex Jennings Vacuum Heating Pump
   1 Jennings Condensation Pump and Receiver
42. Office Bldg.—17th & Sansom St.
   1 Single Jennings Vacuum Heating Pump
43. Rittenhouse Apartments
   1 Jennings Condensation Pump and Receiver
   1 Duplex Jennings Air Line Pump
44. Apt. House—19th & Spruce Sts.
   1 Duplex Jennings Vacuum Heating Pump
45. Bankers Trust Bldg.
   1 Duplex Jennings Vacuum Heating Pump
46. Sylvania Hotel
   1 Duplex Jennings Vacuum Heating Pump
47. Engineers Club
   1 Single Jennings Vacuum Heating Pump
48. Philadelphia Electric Company
   1 Duplex Jennings Vacuum Heating Pump
49. Jefferson Hospital
   1 Duplex Jennings Vacuum Heating Pump
50. Maryland Casualty Company
   1 Duplex Jennings Vacuum Heating Pump



The Ohio Bank Building, Toledo, Ohio
Mills, Rhines, Bellman & Nordhoff, Architects
Glazed throughout with Libbey·Owens·Ford Polished Plate Glass

WITH each passing year, dozens of majestic structures of steel and stone and glass arise, to bear eloquent testimony to the genius and vision of the American Architect. Libbey·Owens·Ford is proud of the fact that a substantial number of these fine buildings are glazed with Libbey·Owens·Ford Glass—an impressive tribute to the higher quality of Libbey·Owens·Ford products

LIBBEY·OWENS·FORD GLASS COMPANY

TOLEDO, OHIO

Manufacturers of Flat-drawn Clear Sheet Glass, Polished Plate Glass, and Shatter-proof Safety Glass

A few of the recent Libbey-Owens-Ford installations include: The Empire State Building, New York, Shreve-Harmon-Lamb, Architects; The Waldorf-Astoria Hotel, New York, Schultze & Weaver, Architects; The New Fisher Y. M. C. A., Detroit, Michigan, Albert Kahn, Incorporated, Architects; Villa Duchesne, St. Louis, Missouri, O'Meara & Hills, Architects; El Royale Apartments, Los Angeles, California, M. Douglas Lee, Architect

Put no Boisterous Roof on a Dignified Building

That would be like a Joseph's Coat on a Supreme Court Justice.

But such an unfavorable, artificial effect can never result from the soft, natural colors of Sheldon's Slates, no matter how many are combined in a single roof.

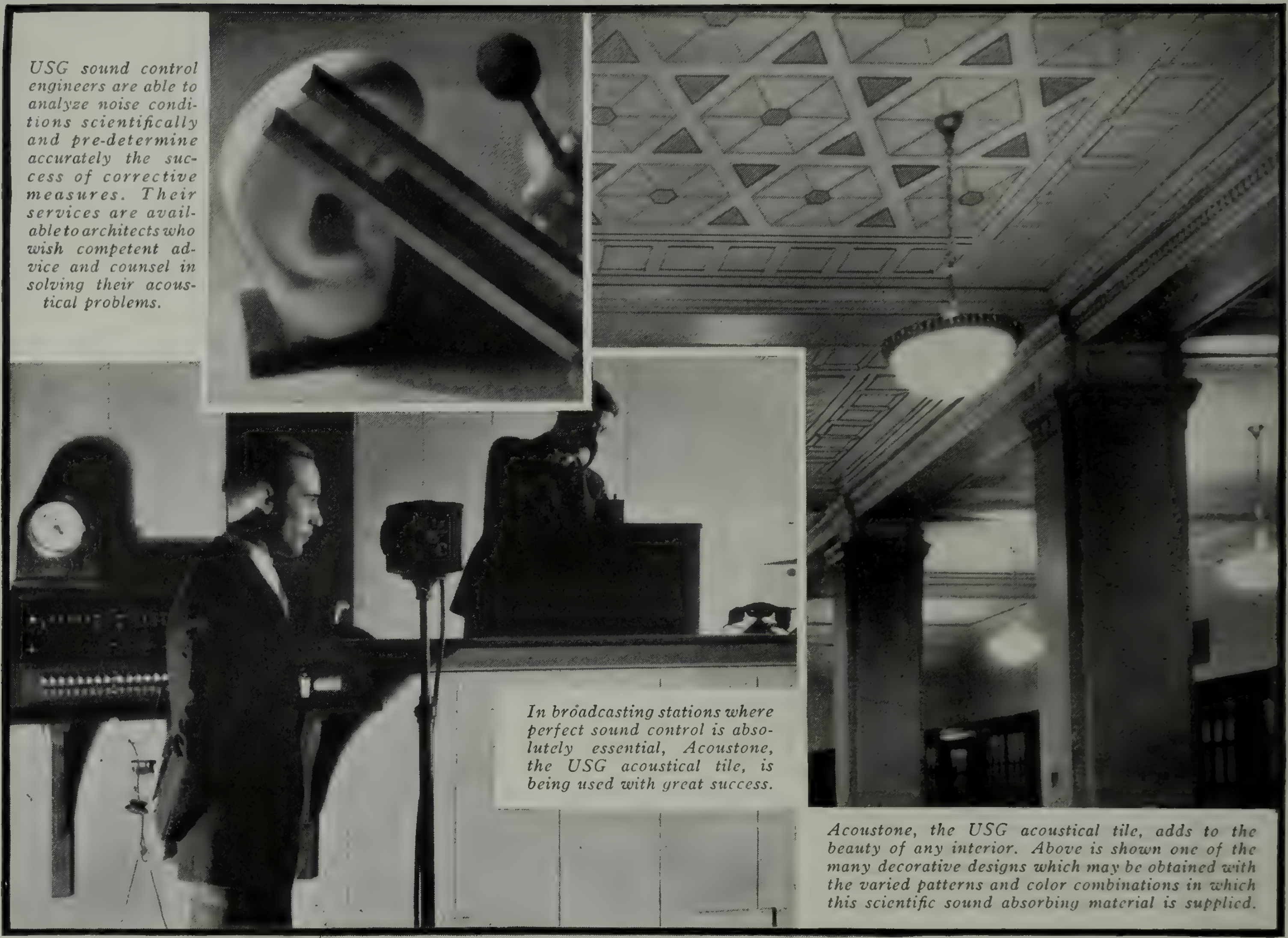
This residence, for instance.* The several colors represented in its roof blend together into an ensemble of quiet beauty—

—because there's not a gaudy color in any of Sheldon's many quarries. Even the Unfading Arabian Red has an inimitable tonal value that harmonizes with the noblest of edifices.

Naturally, the selection of a color combination must be judiciously made, in the light of our experience with innumerable roofs for high-class buildings of every type. An experience which we hope you will grant us the privilege of applying to your needs.

*Of R. E. Clements, Larchmont, N. Y., Hunter McDonnell, New York, Architect

F.C. SHELDON SLATE CO.
GENERAL OFFICES · GRANVILLE · N·Y·
· BRANCHES IN PRINCIPAL CITIES ·



USG sound control engineers are able to analyze noise conditions scientifically and pre-determine accurately the success of corrective measures. Their services are available to architects who wish competent advice and counsel in solving their acoustical problems.

In broadcasting stations where perfect sound control is absolutely essential, Acoustone, the USG acoustical tile, is being used with great success.

Acoustone, the USG acoustical tile, adds to the beauty of any interior. Above is shown one of the many decorative designs which may be obtained with the varied patterns and color combinations in which this scientific sound absorbing material is supplied.

How Architects Use This USG Service When Sound Control Is Essential

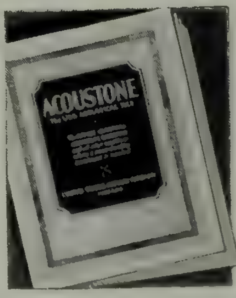
A Message to Architects from The United States Gypsum Company

ARCHITECTS who are called upon to specify materials and methods for controlling sound—by either insulating it or absorbing it — have found the services of a USG sound control engineer especially helpful.

Whenever you have a commission which calls for acoustical treatment, a USG engineer will gladly analyze the problem and give you a dependable solution. If desired, he will assist you to prepare the specifications. This counsel and advice on sound control will be thoroughly competent and his recommendations on materials and methods wholly dependable.

The United States Gypsum Company supplies not one, but many types of materials and constructions for use in controlling sound. For absorbing noise, Acoustone, the USG acoustical tile, has been used with good success in both new and existing buildings. It is easily and quickly applied over present walls or ceilings without interruption to business or other activities.

Where installed, Acoustone creates a comfortable noise level. A wide selection of beautiful designs and shapes in varied colors is available. These colors and designs harmonize with all styles of architecture and add to the decorative attractiveness of any surroundings. Made of mineral fibre, Acoustone is fireproof and, when soiled, may be easily cleaned.



This booklet sent free. *It shows how Acoustone, the USG acoustical tile, controls sound while providing beautiful and harmonious decoration.*

You are invited to call in a USG engineer to help you with any problem in sound control. Of course, there will be no obligation for this service. Please address the United States Gypsum Company, Dept. 431, 300 West Adams Street, Chicago, Illinois.

ACOUSTONE

● Architect, Burrell Hoffman, New York City—Mechanical Engineers, Hunter & Hudson, San Francisco—Builder, Dowsett-Ruhl Company, San Francisco—Heating Contractor, Higgins & Kraus, San Francisco.

This beautiful California residence

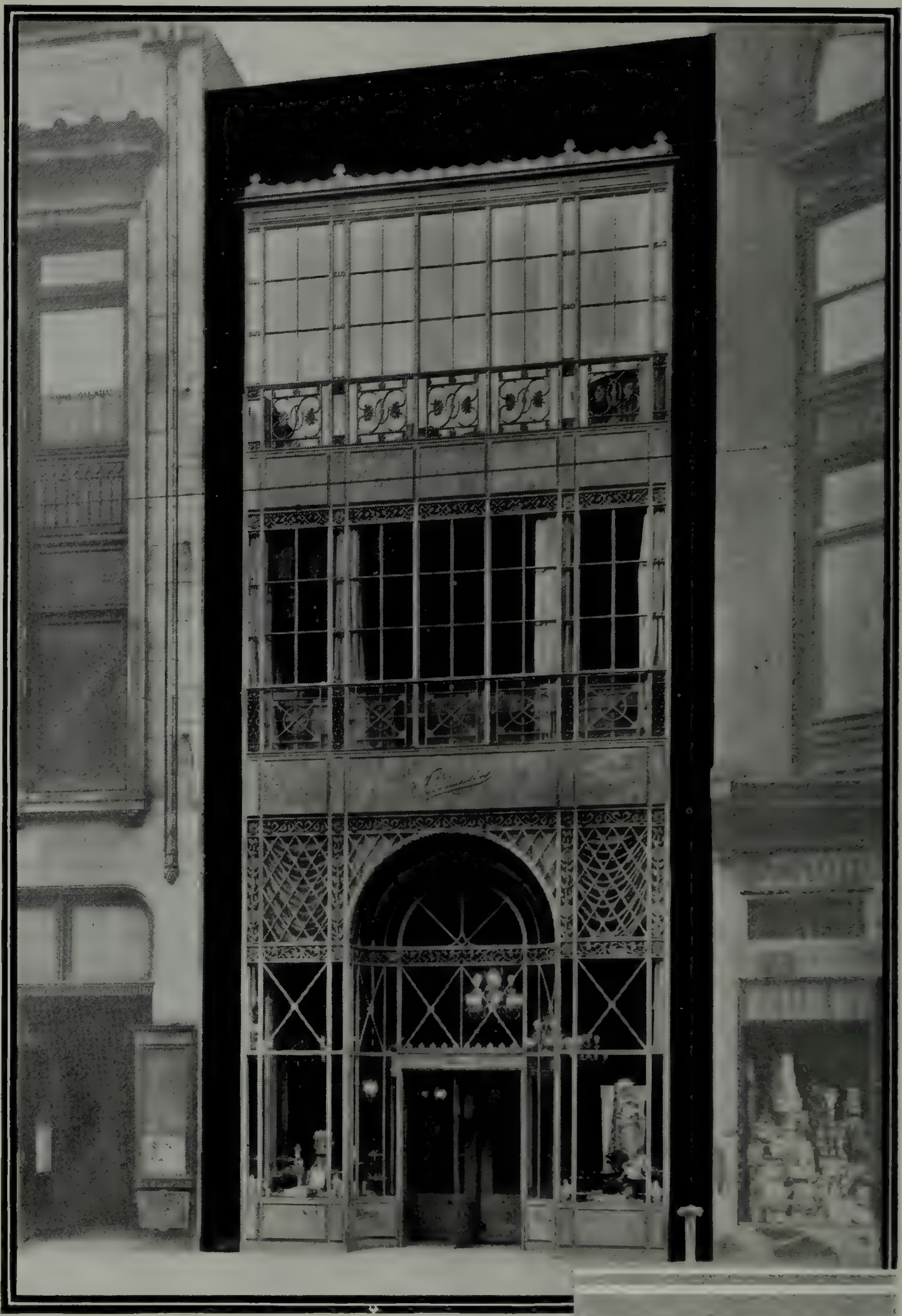
IS WARMED BY AMERICAN RADIATORS

● Not only is this one of the loveliest residences in Northern California, but every detail of it has been designed for comfort as well as beauty.

● An Ideal Redflash Oil Burning Boiler sends healthful even warmth to concealed Corto Radiators in every room.

● The architect made sure that the owner would find it just as desirable a home after completion as it appeared in the plans.

AMERICAN RADIATOR COMPANY
DIVISION OF
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
40 West 40th Street, New York, N. Y.



Black Carrara provides an effective frame and enhances the beauty of this Whitman store front on Chestnut Street, Philadelphia. Architect, Edmund B. Gilchrist, Philadelphia

FRAMED IN LUSTROUS BLACK CARRARA

HERE is more than a store front It is rather a picture of modern architectural design with moulding of polished black Carrara.

The black side panels give a note of distinction to the store. The mirror-like surface of the glass catches the flashing sunlight and lures the eye with brilliant high-lights and softened shadows. Little wonder that architects find new uses for this modern glass. When combined with richly grained marbles or burnished metals, it is strikingly effective and is in perfect key with modern decorative trends.

As a permanent structural material Carrara glass is equally desirable. It has great strength. It does not lose its polished surfaces. It does not check or "craze." Actual usage has proved that Carrara expands and contracts much less than other comparable materials.

There are many, many uses for Carrara, inside as well as out. You can see it in modern hotels, restaurants, cafeterias, stores, banks and office buildings. Some of it will be brilliant black Carrara, some will be polished white Carrara, while often you will find Frostex—gleaming white with a slightly rippled finish. For full information about Carrara glass and its use, write to Carrara Department, Pittsburgh Plate Glass Company, Pittsburgh, Pa.

CARRARA

Modern Structural Glass

Why have more than
200 THEATERS
so quickly adopted

Genuine Air Conditioning?

THERE'S just one reason. It's good box office. Ten years ago, air conditioning a theater was new, untried. But so quickly did comfortable indoor weather the year round prove an all-season drawing card, that de luxe theaters going up today think of the necessity for air conditioning almost as quickly as they think of the screen.

More than 200 of these modern theaters today have Carrier systems of Manufactured Weather. That's because Carrier—through the architect—offers the theater owner an unequalled set-up on every job. First, a quarter of a century of experience and constant research work in air conditioning. Second, a scientifically complete air-conditioning system, that provides ideally comfortable weather the year round. Third, full assumption of moral and financial responsibility for every job, both to the architect and his client. Fourth, any necessary service after the job has been installed and operating successfully.

This same fourfold Carrier service policy which has been so successful in the growth of air conditioning in the theater field is also at your service in conditioning buildings of all kinds—large or small—department stores or retail shops, office buildings or private offices, or scores of varying industrial processes. While you think of it, why not write a brief note to one of our offices for additional information, or ask for a representative to call, if you wish

Carrier Engineering
Corporation

A DIVISION OF CARRIER CORPORATION

Theater Division: 2013 Paramount Building, New York; 39 Cortlandt Street, New York; 4221 Diversey Avenue, Chicago; 748 East Washington Street, Los Angeles.

Home Offices: Newark, New Jersey. *Branch Offices:* Boston, New York, Philadelphia, Washington, Cleveland, Detroit, Chicago, Dallas, and Los Angeles. For *foreign office* addresses write Newark office.

Well over 3,000 systems of Manufactured Weather are now installed in more than 200 kinds of business

Making the "Talkies" safe with A. D. T.

Landmarks of Modern Protection

Leila Hyams, Metro Star, featured in the popular motion picture, "The Big House", shows how to use A. D. T. in case of fire.

PRODUCING "talkies" at the Metro-Goldwyn-Mayer Studios at Culver City, Calif., requires over $11,000,000 of property. Complete protection against fire is essential — that's why A. D. T. Central Station Watchman Supervisory and Fire Alarm Service is employed.

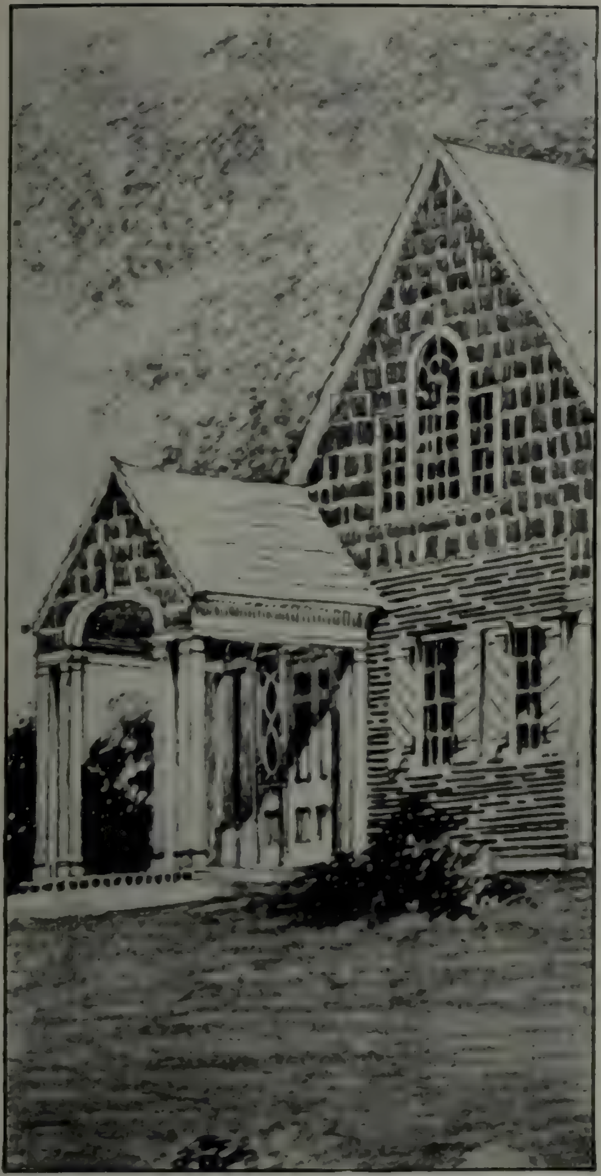
The margin of safety is greater with A. D. T. —every move of the watchmen is constantly supervised—fire alarms promptly transmitted directly to the fire department.

There are A. D. T. protection services for operation through A. D. T. Central Stations or for owner operation. See our catalog in Sweet's or write for complete data.

Controlled Companies of

American District Telegraph Company

155 Sixth Avenue, New York, N. Y.



For example: contrasting tone values call for Venus Pencils. Above is section (below is reduction) of architect's pencil sketch of Short Hills Country Club, Short Hills, N. J. By C. C. Wendehack, architect, New York City, specialist in country club design.

For Textural Qualities . . .

Venus Pencils

ANY DESIGN—no matter how intricate—can be developed. Proper tone values are easy. Because Venus Pencils come in 17 shades of black. From 6B softest to 9H hardest.

Are they uniform? Here's our challenge—come to our plant and we'll put in your hands Venus Pencils of any grade for any year since 1905. You'll find the 2H of today exactly the same as the 2H of two, twelve or twenty-five years ago. And so on, in every degree.

A new feature—you can now tell the grade of a Venus Pencil at a glance. Each has its degree of black stamped on three sides. No matter how the pencil lies on the table, the grade is never hidden.

If you are not now using Venus Pencils, choose the degree you prefer and write for a free sample. We want you to try Venus.

AMERICAN PENCIL CO., HOBOKEN, N. J.

* * *

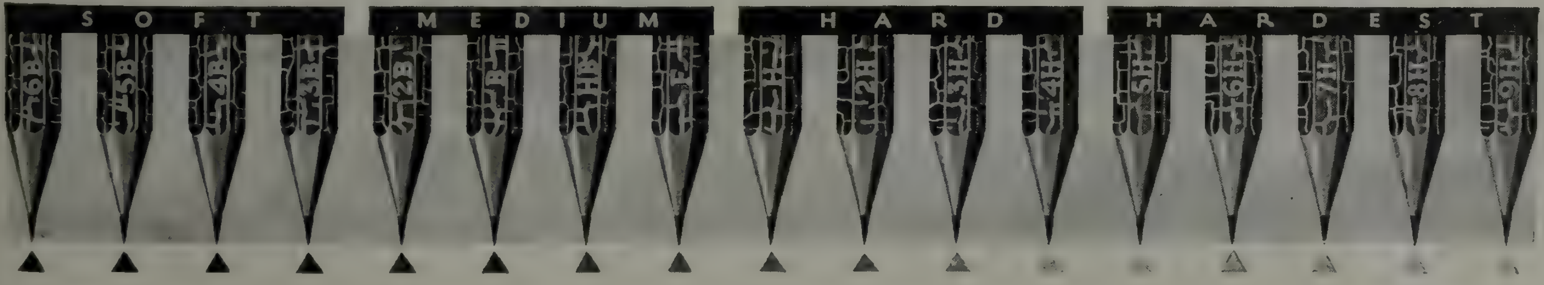
If you've never used Venus erasers, we should like to have you try them. They are better.

* * *

Unique Thin Lead Colored Pencils put a complete palette at your finger tips. 24 different colors. Can be sharpened to a fine point. Make wash effects easily.

VENUS PENCILS

17 DEGREES OF BLACK—FROM 9H HARDEST TO 6B SOFTEST



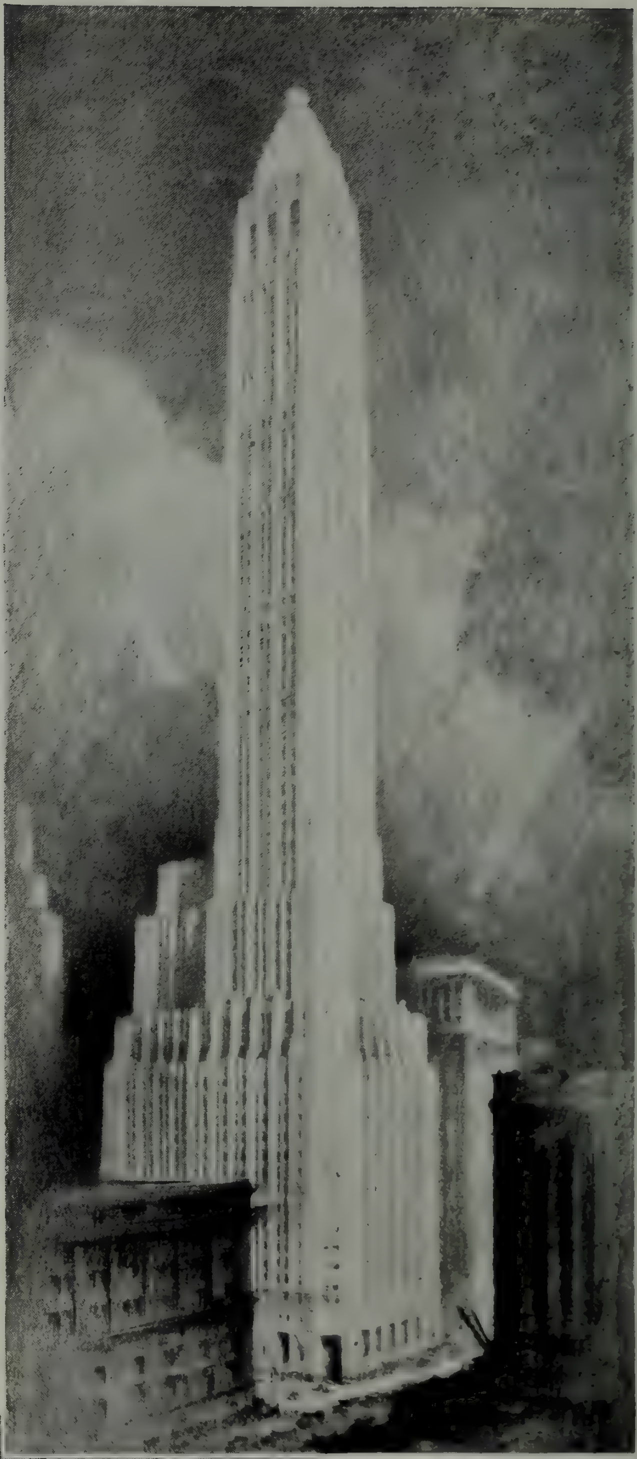
"YOUNGSTOWN" in the Specifications Means Ease in the Installation . . .

WHEN YOUNGSTOWN pipe is specified for the plumbing, heating, sprinkler or refrigerating systems of a building it is a specification that means an easy installation for the contractor. This life-time steel pipe, while tough and sturdy, is, nevertheless, easy to cut, thread and install on the job, making its installation both easier and faster—features which instantly appeal to contractors.

Coupled with this greater ease of installation is its long-lived endurance which insures a permanent piping job, benefiting the contractor, architect and owner alike.

If you are not now using Youngstown steel pipe, try it in your next job. It is specified by leading architects, and stocked by leading jobbers and dealers from coast to coast.

The YOUNGSTOWN SHEET AND TUBE COMPANY
One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"
General Offices—YOUNGSTOWN, OHIO



The City Bank—Farmers Trust Bldg. New York City, where permanence is assured in the plumbing system by Youngstown Steel Pipe, and in the ventilating system by Youngstown Copperoid Steel Sheets.

Architects—**CROSS & CROSS New York**

Mechanical Engineer—**CLYDE R. PLACE, New York**

Builders—**GEORGE A. FULLER CO., New York**

Plumbing Contractor—**J. L. MURPHY CO., New York**

Ventilating Contractor—**BAKER SMITH & CO., New York**

DISTRICT SALES OFFICES

ATLANTA..............Healy Building
BOSTON..Chamber of Commerce Bldg.
BUFFALO.......Liberty Bank Building
CHICAGO............Conway Building
CINCINNATI...Union Trust Building
CLEVELAND....Terminal Tower Bldg.
DALLAS............Magnolia Building
DENVER......Continental Oil Building
DETROIT..............Fisher Building
KANSAS CITY, MO...Commerce Bldg.
LOS ANGELES......3000 Santa Fe Ave.
MEMPHIS.................42 Keel Ave.
MINNEAPOLIS.......Andrus Building
NEW ORLEANS.....Hibernia Building
NEW YORK..............30 Churh St., Hudson Terminal Building
PHILADELPHIA..Franklin Trust Bldg.
PITTSBURGH.........Oliver Building
SAN FRANCISCO 55 New Montgomery St.
SEATTLE............Central Building
ST. LOUIS........Louderman Building
YOUNGSTOWN...Stambaugh Building
LONDON REPRESENTATIVE—The Youngstown Steel Products Co., Dashwood House, Old Broad St., London, E.C. England

YOUNGSTOWN

GALVANIZED SHEETS PROTECT ∵ ∵ ∵ ∵ ∵ SAVE WITH STEEL

AUDIBLE SOUNDS . . . or UNCONTROLLABLE NOISE?

A sound-subduing Armstrong's Cork Tile Floor in the office of Mr. R. B. Hull, Lancaster. This custom-built floor is made from tiles 4½" x 9".

A cork floor helps directors hear what they want to hear . . .

SCRAPING chairs, nervous feet, and dropping objects do not disturb a directors' meeting in a room floored with Armstrong's Cork Tile. Cork Tile rules out the noise—noise can't frustrate speakers.

Where quiet is an asset, Armstrong's Cork Tile is the floor to specify. Its pure resilient cork cushions every footstep, hushes every floor noise.

Cork Tile is made in three warm shades of brown. The tiles are laid by hand, giving you an opportunity to plan any floor design you wish. Thirty-one standard tile sizes facilitate this designing of individual patterns.

When you install a floor of Armstrong's Cork Tile, you have the satisfaction of knowing that you have installed a permanent floor of lasting beauty. It shows remarkable resistance to wear and tear of every sort. If the floor is lacquered as soon as it is laid, an occasional light waxing and polishing is all that is needed to preserve its appearance indefinitely.

Cork Tile is as appropriate for private homes as for public buildings. Let us send you our booklet, "Custom-Built Floors of Cork." Besides giving you valuable information about Cork Tile, it also describes Linotile, another hand-laid Armstrong Floor. Write to the Armstrong Cork Co., Custom Floors Department, Lancaster, Pa.

Armstrong's Ⓐ Product

Armstrong's CUSTOM FLOORS

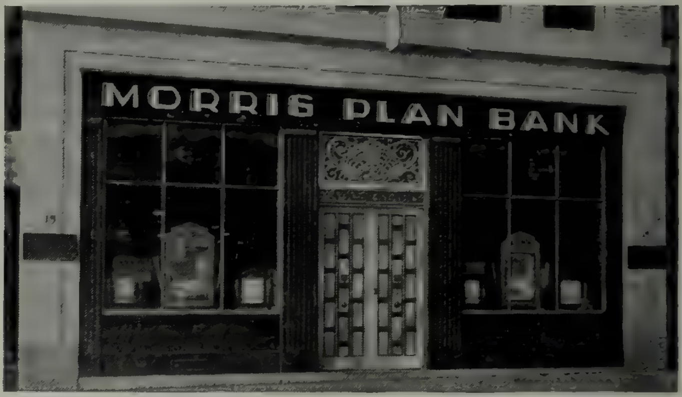
LINOTILE **CORK TILE**

MADE BY THE MAKERS OF ARMSTRONG'S LINOLEUM

PERMANENT AS ONLY NICKEL ALLOYS CAN BE

• • •

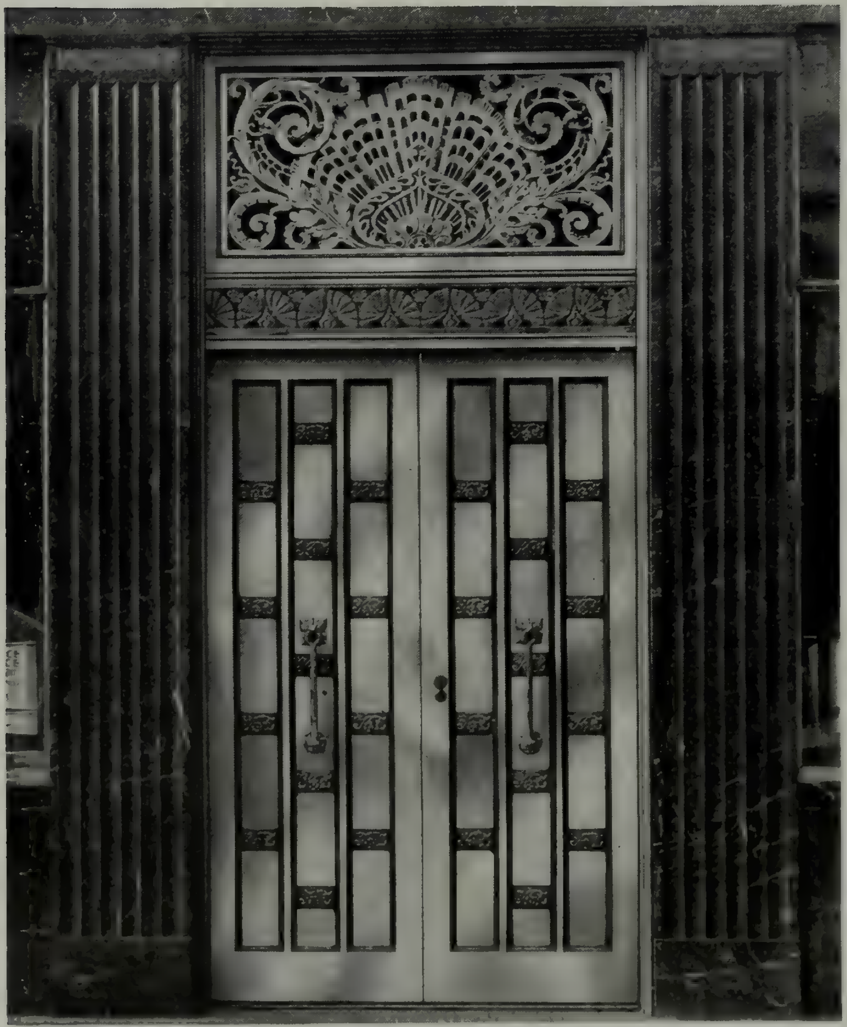
WHERE WEAR IS HARDEST



View of exterior metal work in Monel Metal and bronze at Morris Plan Bank, Baltimore, Md. Note particularly effectiveness of cast Monel Metal sign letters against background of black marble.

MONEL METAL INSURES LASTING BEAUTY

• • •



Entrance door of Monel Metal and bronze installed in Morris Plan Bank, Baltimore, Md., and executed by SUPERB BRONZE & IRON CO., INC., *Brooklyn, N. Y.*
Architects: TAYLOR & FISHER, *Baltimore, Md.*

You find evidence of Monel Metal's increasing architectural use on every hand—in homes, in office buildings, banks and public institutions of all kinds. To doors, railings, grille work, store fronts and ornamental metal work Monel Metal brings a degree of beauty and permanence that only this lustrous Nickel alloy can give.

Monel Metal's silvery beauty blends perfectly with every scheme of decoration...lending a crisp note of modernity to any style of design...providing strength that asks no favors of time or weather ...combining many advantages in the most modern of new-day materials—Monel Metal!

Monel Metal gets its silvery beauty from Nickel—the whitening, strengthening partner used in many modern alloys—stainless steel and Nickel Silver, to mention only two. Nickel gives Monel Metal its steel-like strength, its immunity to rust and high corrosion-resistance. Because Monel Metal is two-thirds Nickel, it is one of the easiest materials to clean and keep clean. Being solid throughout, like sterling, with no coating to wear off, Monel Metal always retains its original lustre and attractiveness.

When planning future metal work remember that "Nickel Alloys look better longer". Let us send you complete information about Monel Metal in the metal arts.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

MONEL METAL

INCO MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

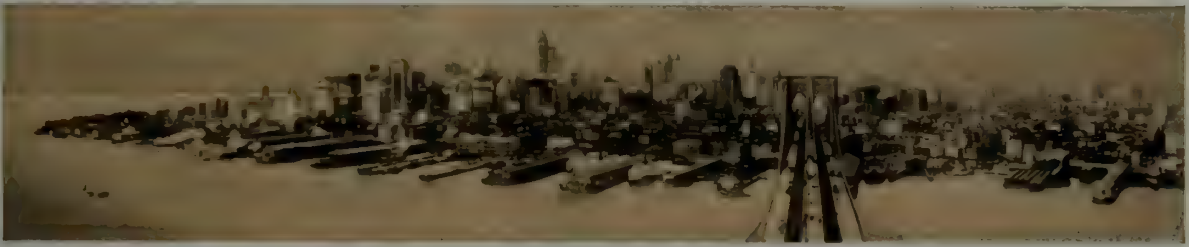
NEW YORK CITY
LOWER MANHATTAN

1798

Before the use of Elevators.

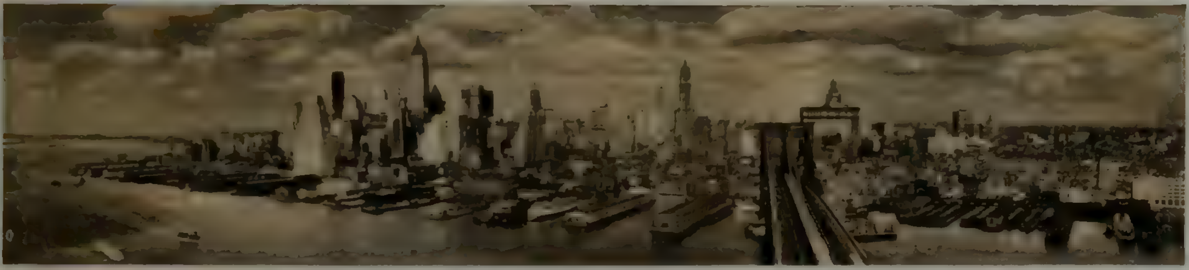
1876

22 years after Elisha Otis made the first Safe Elevator.



1908

A few years after the Otis high-speed gearless electric elevator was perfected.



1930

6 years after the introduction of Otis Signal Control Elevators.

ITS GROWTH IN 132 YEARS

Presented to illustrate an outstanding example of the effect which the seventy-six years development of the Otis Elevator Industry has had on the cities of the World.

OTIS ELEVATOR COMPANY
OFFICES THROUGHOUT THE WORLD

This Majestic New Telephone Building in Cincinnati » » »

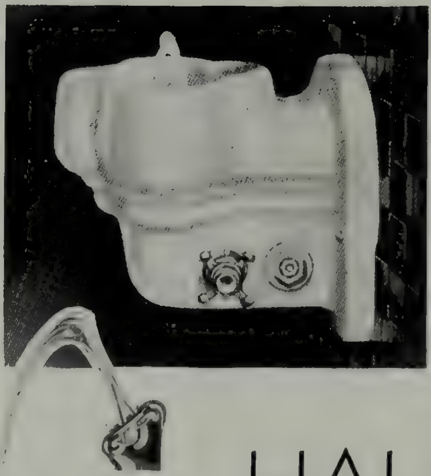
The New Cincinnati Bell Telephone Bldg.
Harry Hake, Architect
Thomas Canary, Plumbing Contractor
Mutual Mfg. and Supply Co., Jobber

THE majestic dignity and sheer beauty of line that characterizes so many of the new Bell Telephone buildings now going up in various cities is reflected in this new Cincinnati structure. A fitting tribute to the efficiency and sanitary advantages of Halsey Taylor Drinking Fountains is the fact that the architects selected these modern fixtures throughout, using No. 608, as illustrated, in attractive color to suit their interior scheme. Modern fountains, modern features, a modern note in any building. The Halsey W. Taylor Co., Warren, Ohio.

●

Automatic Stream Control . . Practical Two-Stream Projector

Automatic stream control (uniform height of drinking stream regardless of pressure changes) and patented two-stream projector (illustrated) makes it impractical for lips to touch source of supply. No risk of contamination, no squirting or tampering possible, no annoying servicing problems!

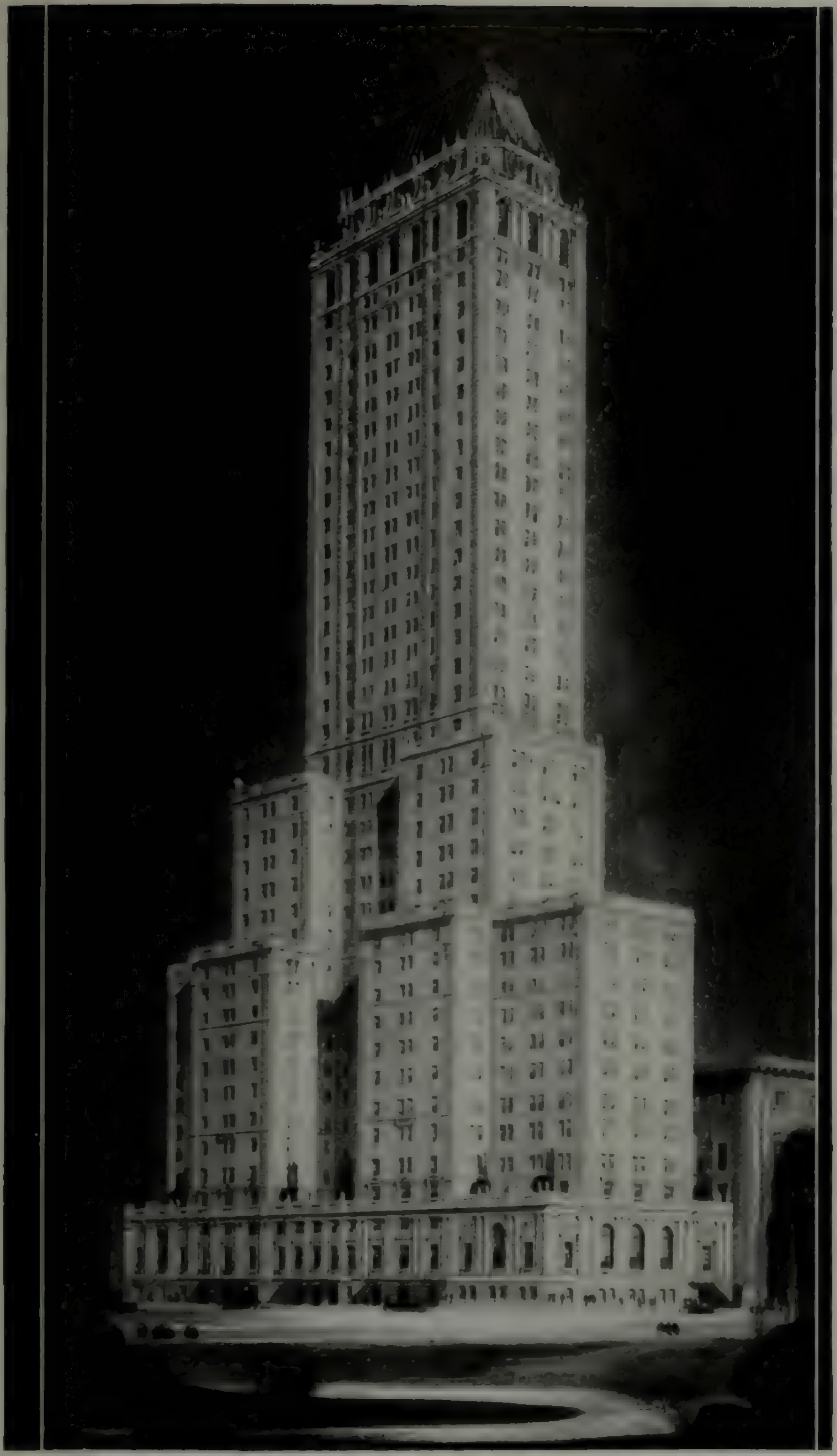


No. 608 with the exclusive sanitary projector

HALSEY TAYLOR

Drinking Fountains

THE SPECIFICATION FOR SANITATION



HOTEL PIERRE, FIFTH AVE. AT 61st ST., NEW YORK CITY
Schultze & Weaver, Architects
The Browning Painting Company, Inc., Painting Contractors

RISING forty-two stories in Fifth Avenue, just above the Park Plaza, the recently completed Hotel Pierre is an imposing addition to that famous thoroughfare. The early Georgian influence of the exterior is carried through the entire building, including lobbies, public rooms, suites and furnishings. The blending of harmonious furnishings, modern appointments and appropriate decoration contribute to the beauty and charm of Hotel Pierre. Included in the carload of Pratt & Lambert Varnish Products used to enhance the interior surfaces was Vitralite, the Long-Life Enamel, the super enamel for palatial buildings and residences, as well as the logical, economical finish for modest homes. Ask nearest P&L Architectural Service Department for particulars of any finish desired.

PRATT & LAMBERT-INC., 108 Tonawanda Street, Buffalo, N. Y. (Phone Delaware 6000); 3301 38th Avenue, Long Island City, N. Y. (Phone Stillwell 5100); 320 West 26th St., Chicago, Ill. (Phone Victory 1800). In Canada: 28 Courtwright St., Bridgeburg, Ontario.

TRADE MARK
PL
REG U S PAT OFF

"Save the surface and you save all" Paint & Varnish

PRATT & LAMBERT VARNISH PRODUCTS

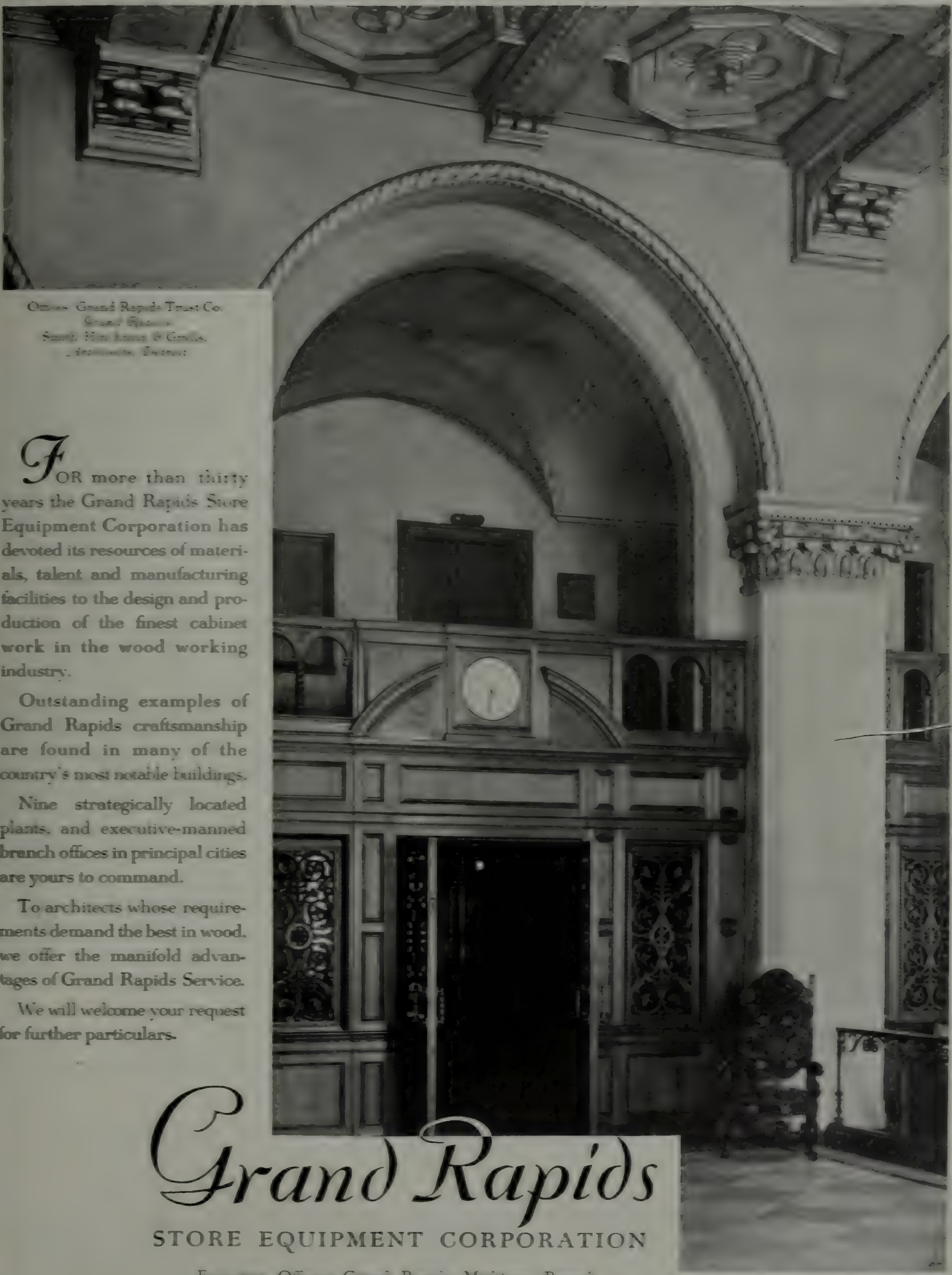
Residence of Alexander Barker, Cross River, New York
Henry Corse, Architect

Inevitable seems the choice of this roof of Brittany Tile to crown the beauty of an English type of house. Equally perfect is the effect when the right tile is used to roof a building of Georgian architecture—or Colonial—or Spanish. Versatile in style, varied in color, tile is the adaptable roofing material of lasting service and changeless beauty. At your request one of our representatives will call; or we will mail you a catalogue.

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL Roofing Tile

New York: 565 Fifth Avenue—CHICAGO: 104 South Michigan Avenue—Washington: 738 Fifteenth Street, N.W.



Offices Grand Rapids Trust Co.
Grand Rapids
Smith, Hinchman & Grylls,
Architects, Detroit

FOR more than thirty years the Grand Rapids Store Equipment Corporation has devoted its resources of materials, talent and manufacturing facilities to the design and production of the finest cabinet work in the wood working industry.

Outstanding examples of Grand Rapids craftsmanship are found in many of the country's most notable buildings.

Nine strategically located plants, and executive-manned branch offices in principal cities are yours to command.

To architects whose requirements demand the best in wood, we offer the manifold advantages of Grand Rapids Service.

We will welcome your request for further particulars.

Grand Rapids

STORE EQUIPMENT CORPORATION

Executive Offices: Grand Rapids, Michigan. Branch offices and representatives in every territory. Factories: Grand Rapids, Portland, Ore., Baltimore, New York City

Solving problems of DESIGN ECONOMY

Genesee Valley Trust Company Building, Rochester, New York.
Architects: Voorhees, Gmelin and Walker, New York City.
Associate Architect: Carl C. Ade, Rochester, New York.
General Contractor: A. Frederick and Sons Company, Rochester, New York.

THE thoroughly pleasing expression of modern architectural design that characterizes the exterior of the Genesee Valley Trust Company Building, Rochester, New York, has its counterpart in the advanced engineering and modern materials that are found in the building. This sound structural planning is reflected in the use of J & L Light Weight Rolled Steel Channels as stringers for all stairways.

J&L LIGHT WEIGHT ROLLED STEEL CHANNELS

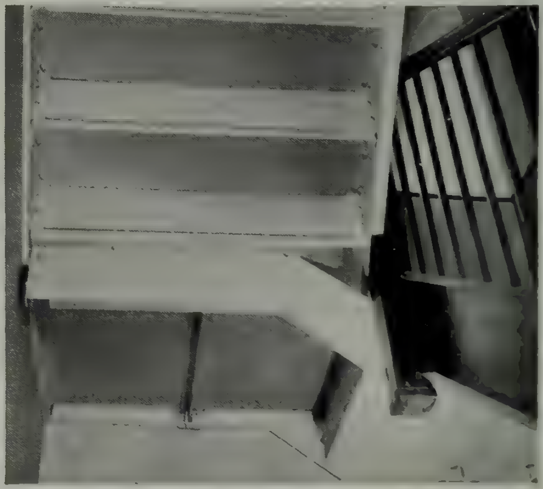
J & L Light Weight Channels offer the advantages of saving in weight over standard channels of equal depth, greater strength than formed plates of equal weight, ease and speed in fabrication and installation, adaptability to either the simplest or most elaborate decorative treatment and neat appearance of the finished job.

Because of these advantages, J & L Light Weight Channels appeal to architects and engineers for use as stringers for all types of stair construction—for clubs and residences, where pleasing appearance is essential; for public buildings and schools, where stairways must be designed and constructed for hard usage, and heavy traffic as well as neat appearance, and for office buildings in which stairways must be designed primarily for strength with economy.

J&L STEEL

The properties of both the 10-inch and 12-inch sections suggest the possibility of many other important uses for J & L Light Weight Channels. Write for complete engineering data. There is no obligation.

2 SIZES and 3 WEIGHTS
10"— 8.0 lbs.
10"— 8.7 lbs.
12"—10.6 lbs.



Stair construction with J & L Light Weight Channels in the Genesee Valley Trust Company Building.

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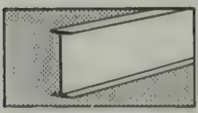
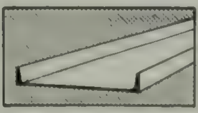
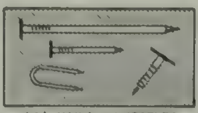


J&L JUNIOR BEAMS

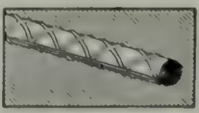
J&L STEEL PIPE



J&L LIGHT CHANNELS



J&L NAILS and STAPLES BRIGHT and GALVANIZED



J&L CONCRETE BARS

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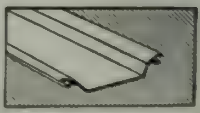

J&L STEEL PILING

In America's newest and finest buildings

TRACE the skyline of any metropolis and prominent among the many fine buildings you will find complete installations of SPANG WELDED STEEL PIPE—the product of one of America's oldest pipe manufacturers—the plant where century-old ideals of craftsmanship are combined with ultra-modern methods to produce America's outstanding quality pipe. SPANG WELDED STEEL PIPE is universally distributed, assuring quick availablity whenever or wherever needed.

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WELDED STEEL PIPE

This FREE SAMPLE is yours for the asking!

Willingness to send free samples and urging a test indicates superiority for any product —because samples cost money that comes back only if orders are received.

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Dampproofing and waterproofing of foundations, basements, tunnels, reservoirs, sumps, pits, cisterns, vats, tanks, floors, walls, roofs, etc.

Protection of concrete and masonry against disintegration.

Protective coating of concrete, masonry, structural steel, pipe lines, metal, etc., against the destructive influences of fresh and salt water, moisture, gases, chemical fumes, brine, acids and alkalies, etc.

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HEADLEY EMULSIFIED ASPHALTS used alone or in conjunction with saturated fabric, are applied *cold* and deposit a pure asphalt coating, ductile, well bonded and impervious to water, acids, alkalies, brines, fumes, gases and other corrosive agents.

Bond completely to cold, wet or damp surfaces and not destroyed by freezing.

No cutting of drums or material as with hot-applied asphalts.

No heating, no primer or dilution and no skilled labor required.

Can be brushed, sprayed, flowed or squeegeed.

No clay or other injurious adulterant ingredients.

Finished deposit is odorless and tasteless. No contamination from contact.

No flammable or toxic solvents. No fire hazard or menace to workmen's health.

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WE gladly offer the above sample and want you to send for yours—because fair test invariably proves the great protective efficiency, the low application cost and the general satisfaction of Headley Emulsified Asphalts.

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Once you have seen the simplicity of application, the strong impervious uniformly bonded coating, etc., you will be through with solid (hot-applied) asphalts, cut-backs and clay-suspended asphalts, and will thank us for putting you on the right track.

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Emulsified Asphalts for Industrial Uses
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the small cost will surprise your clients!

PUT RUBBISH AND GARBAGE IN THE HANDY HOPPER DOOR AND FORGET IT

INCINERATION
FOR THE MODERN HOME

Most home owners know that incineration is one of the welcome conveniences of a *modern* home. But everyone doesn't know how little it costs!

Compared with other home conveniences the cost of a Kernerator represents a most amazing value. It lasts as long as the building and there is no upkeep cost. It is a *daily* convenience and health protection. All garbage and other household waste is placed in the handy hopper door in the kitchen and falls to the combustion chamber in the basement. The accumulation is air-dried and destroyed by burning—no extra fuel is necessary. Non-combustibles are flame sterilized and removed with the ashes.

When you specify a Kernerator you are selecting a product guaranteed by a financially responsible manufacturer with a nation-wide service organization.

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Offices in over 150 cities

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C. B. SECTIONS

The Central West now has a source of its own for the production of the popular C. B. SECTIONS, previously manufactured only by Carnegie Steel Company at Pittsburgh. Illinois Steel Company, at South Chicago Works, manufactures a complete series of C.B. SECTIONS. Production facilities for these Sections include a new open hearth plant, soaking pits, rolling mill, and ample storage facilities located adjacent to mills for the production of American Standard structural shapes. Thoroughly modern facilities for preparing and shipping C.B. SECTIONS assure expeditious service.

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Exacting Standards for IMPERIAL

Quality MOTORS

Squirrel Cage Motor

IMPERIAL MOTORS are built to high, uncompromising and exacting standards. Throughout all operations these standards are maintained by skilled workers and guarded by many careful and rigid inspections. The results are Quality Motors that are QUIET RUNNING and give many years of satisfactory service.

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58 ROOFS PROTECT THIS BUILDING

This outstanding example of modern architecture, housing two department stores, a hotel, an office building, a garage and a host of shops, has 58 separate roof surfaces, each protected by a Carey Built-up Roof.

Carey Roofs are selected for important structures because they possess definite advantages. Built of perfect bonding Carey felts and asphalts, every application step is controlled by rigid specifications. Carey Approved Roof Contractors perform the work, and the finished roof is bonded for 10 or 20 years, according to the type roof selected.

The Carey Specification Book, containing complete data on built-up roofs for all styles of construction, will be mailed on request.

THE PHILIP CAREY COMPANY **Carey** *Lockland,* CINCINNATI, OHIO

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In the
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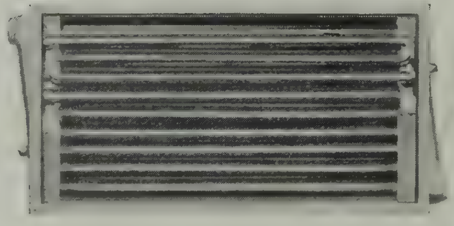
AEROFIN
is the Heat-Surface

as it is in so many of America's notable structures. This is not happenstance. AEROFIN is selected by America's foremost Architects and Engineers because of its *proved* superiority. Pioneering light-weight, non-corrodible, *unit* Fan System Heat-Surface years in advance AEROFIN, designed and constantly improved by Fan Engineers, is still years in advance. Newark will be glad to send informative and appropriate publications upon request.★ Any Office will gladly render prompt, efficient, technical cooperation.



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Pressures up to 350 lbs. gauge

Unit illustrated in section is

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BOOSTER UNITS AEROFIN are also available

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★Please mention where you saw this advertisement.

Home of W. P. Harris, Grosse Pointe Park, Michigan, heated by a Gar-Wood unit.

In this home the GAR-WOOD gave TWICE THE HEAT... AND SAVED $264 A YEAR BESIDES

Built like an automobile radiator, the Gar-Wood boiler is designed to secure an almost complete transfer of heat to the water sections. The Gar-Wood burner is designed to effect almost complete combustion from the time it starts. Designed for and engineered into each other, the Gar-Wood burner and boiler form one complete balanced heating unit . . . to provide automatic heat from either oil or gas at a cost that is less than coal.

But what do home owners who have installed the Gar-Wood say about it? Ask Mr. W. P. Harris of Grosse Pointe Park, Mich. He had been using an oil burner . . . in a boiler built for coal firing . . . with a separate gas heater to heat his domestic water supply. He rebuilt and enlarged his home so that it required double the amount of radiation. After installing a Gar-Wood unit with its built-in water heater, Mr. Harris says:

"During the past heating season, from September 1st to June 1st, I used only one-half of one per cent more oil with the Gar-Wood plant than with the previous oil burning installation, and I heated twice the amount of radiation. In addition I used the Gar-Wood to heat all my hot water, reducing the gas bills over the previous year from an average of $38.00 per month to an average of $16.00 per month." A clear saving of $22.00 per month or $264.00 a year.

For two years the Gar-Wood has met the test of every practical operating condition in private homes. It has been repeatedly proven that its unprecedented efficiency reduces heating costs far below that of any other type of heating unit. Your clients will expect you to tell them all about the Gar-Wood. The coupon will bring you complete information.

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Responsible organizations now distributing through the heating trade should investigate the Gar-Wood franchise. Write the factory for details.

GAR WOOD ENGINEERING CO.
4196 Bellevue Ave., Detroit, Mich.

Gentlemen: Send me . . . without cost or obligation . . . a copy of "A New Principle of Generating Heat at Low Cost."

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Gar-Wood

"What Do You Mean, 'Corrosion'?"
—Asks Time, that Tough Old Tester

For years, scientists have been trying to find out what corrosion is, and how it really acts on pipe. To date, both questions remain without a satisfactory answer.

But in the tests of Time, that Tough Old Tester, the superior *corrosion resistance* of Reading Genuine *Puddled* Wrought Iron Pipe has been established through generations of *actual use*. Time has demonstrated that the green or white corrosion which attacks much non-ferrous pipe CANNOT gain a foothold in Reading 5-Point Pipe. Time has shown that Reading 5-Point Pipe stops rust *at the surface*. And Time has proved, too, that Reading 5-Point Pipe as a rule outlasts ordinary pipe in the ratio of two to one—it's easy to find such proof in your own community.

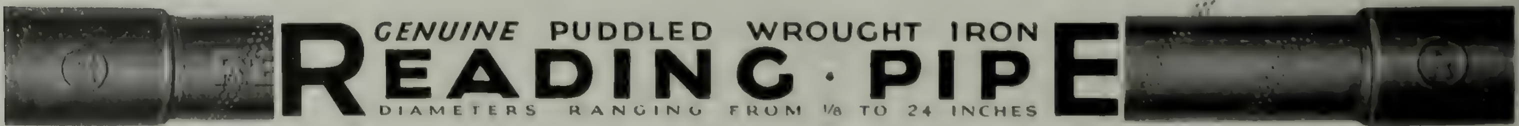
When you specify wrought iron pipe, be sure to make it "Reading"— then you'll know you are getting first quality Genuine *Puddled* Wrought Iron, made as Reading has made it since 1848.

5 POINT PIPE
READING
GENUINE PUDDLED WROUGHT IRON

Use only Reading 5-Point Nipples with Reading 5-Point Pipe . . . you'll know them by the indented spiral band.

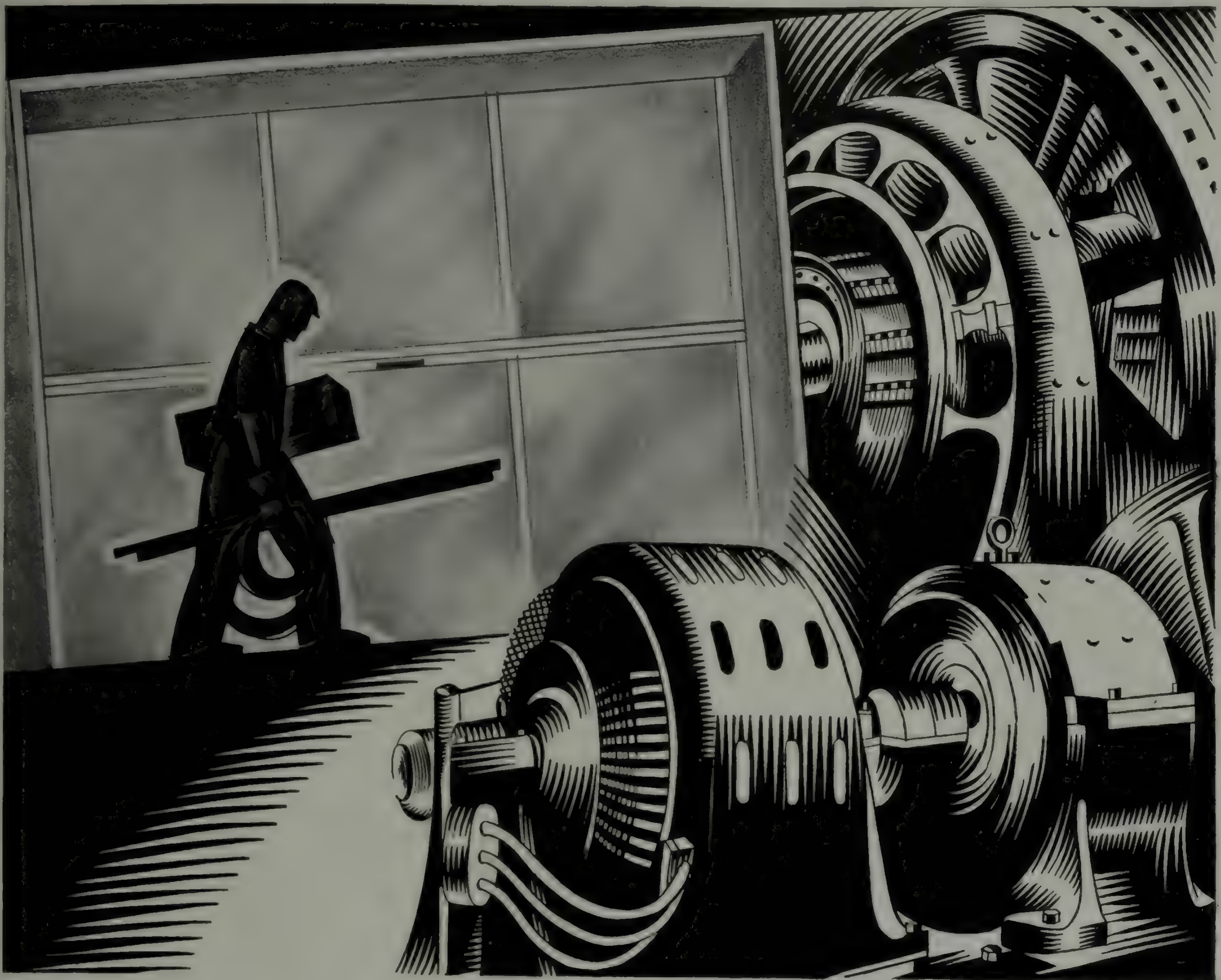
READING IRON COMPANY, Reading, Pennsylvania

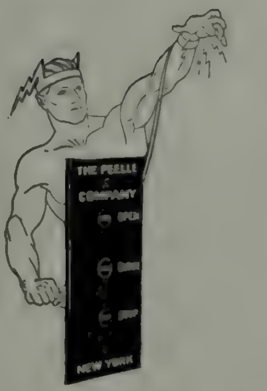
For Your Protection
This Indented Spiral
Forever Marks All
READING PIPE


GENUINE PUDDLED WROUGHT IRON
READING · PIPE
DIAMETERS RANGING FROM 1/8 TO 24 INCHES

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Wrought Iron

THE DOORWAY OF AMERICA'S FREIGHT ELEVATOR TRAFFIC





dynamo . . . modern descendant of primitive tread mills . . . impetus that animates into being the products of industry. But these products must move—from machine to machine—floor to floor—from maker to buyer. Peelle Doors accelerate the flow of products that power produces, help quicken their vertical voyage throughout the plant. Motorized . . . they afford automatic entrance and exit at the touch of an electric button . . . level vertical shaftways into horizontal highways . . . clear the right-of-way for interior traffic. Peelle Doors guard men and freight against accident, save time and labor—function with speed so that production energy may not waste itself in slow motion. In these things Peelle Doors justify a slightly higher first-cost, which low-upkeep and trouble-free service makes negligible through the years. A Peelle catalog will be gladly sent upon request, or consult our engineers.

THE PEELLE COMPANY, BROOKLYN, NEW YORK
Boston, Chicago, Cleveland, Philadelphia, Atlanta and 30 other cities
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PEELLE
MOTORIZED
FREIGHT ELEVATOR
DOORS

Our Sixth Contract

from National Public Service Corp. was for this Important Station

This great new power plant stands on 1593 MacARTHUR Compressed Concrete Piles—the piles of greater bearing capacity—the rough concrete is intimately bonded with the surrounding soil.

This station because of improvements in engineering design is reputed to be one of the most efficient steam-operated stations in the country.

Satisfactory completion of contracts for National Public Service Corporation at Wildwood, N. J., Belmar, N. J., and Long Branch, N. J., indicated the fitness of the MacARTHUR organization to handle the pile contract for the South Amboy (N. J.) Station.

Check your requirements against MacArthur qualifications:

Product . . . . . *proven*
Experience . . . . [illegible] *years*
Equipment . . . . *latest*
Resources . . . *unlimited*
Personnel . . . . *capable*
Clientele . . . . *illustrious*
Responsibility . *demonstrated*
Engineering . . . . *sound*
Performance . . . . [illegible]
Speed . . . . *record-breaking*

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CANADIAN MacARTHUR CONCRETE PILE CO., Ltd., MONTREAL

Giles Drilling Corporation (an affiliated company) will welcome the opportunity to submit estimates on core borings or soundings of any description.

THE exclusive Omicron ingredient in Colored Masterbuilt Cement floors adds substantially to their strength and makes them highly resistant to both abrasive wear and corrosive disintegration. Omicron prevents the fading or clouding action of salt deposits on the floor surface, insuring permanent beauty. The economy and durability of Colored Masterbuilt Floors recommend their use for all cement floor areas designed to be used without covering. May we send complete data on Omicron and Colored Masterbuilt Floors?

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Cleveland, Ohio

Colored Masterbuilt Floor in the Flint Ridge Hotel, Pasadena, Calif. Architect: Myron Hunt.

Nixdorf Hotel, Milwaukee, Wis. Archt., M. Tullgren & Sons Co. Contractors, Robt. L. Reisinger & Co. Ground floor shops equipped with Desco Store Fronts.

Desco METAL STORE FRONTS

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Increase Store Rental Values

For full architectural details see Sweet's catalog. Write us for complete working data and price list. Remember, too, wherever you are there is a distributor near you. We also carry a complete line of "Desco" construction material in our New York City Warehouse.

The use of Desco Store Fronts on a building is not only good design but good business. Their beauty and character improve the building's appearance. Their admirable ability to set off window displays is an important quality to the merchant and enhances the rental value of the ground floor shops. Then, too, their flexibility guards the glass against abnormal wind pressure. Made in a wide variety of metals, including solid copper (plain or embossed), solid bronze in all standard finishes and aluminum alloy (white metal), Desco Store Fronts harmonize with any building design. Specify Desco Store Fronts for your next building.

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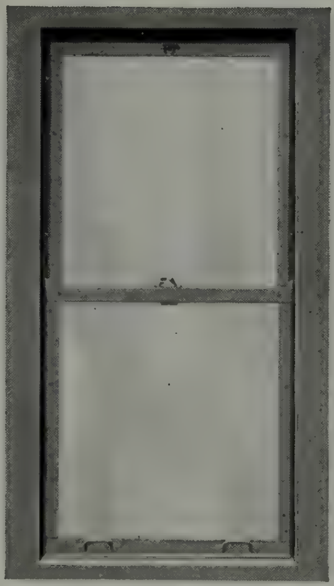
DOUBLE-HUNG STEEL WINDOWS

Alamo National Bank Bldg., San Antonio, Texas
Graham, Anderson, Probst & White, Architects
McKenzie Construction Co., Contractors



The Choice for Good Buildings

THE selection of Truscon Double-Hung Steel Windows by architects of fine buildings bears testimony to their superior quality. Their distinctive features include galvanizing of all steel, welding of all corners, and weather-stripping with spring bronze.

Truscon Double-Hung Steel Windows have trim, cleancut lines, operate easily and are permanent. Moderate cost makes them practical for all good buildings.

Catalogs, suggestions and quotations on request.

TRUSCON DOOR FRAME AND TRIM

A complete unit built into the wall during its construction. Used in interiors of all buildings.

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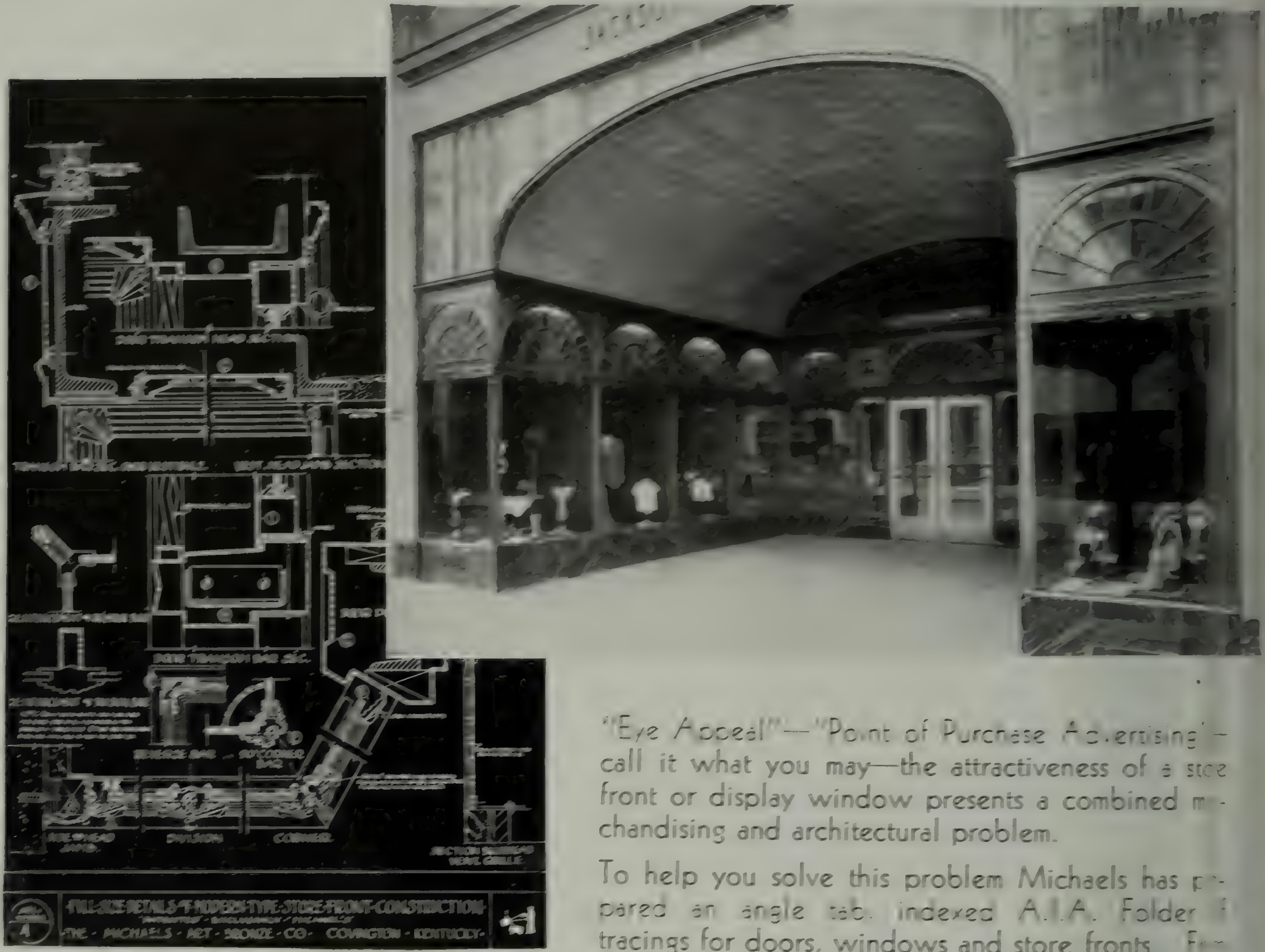
STEEL WINDOWS · STEEL DOORS · STEEL JOISTS · METAL LATHS · STEELDECK ROOFS · REINFORCING STEEL

PLAN your Store Fronts directly from Tracings by MICHAELS


FULL-SIZE DETAILS OF MODERN-TYPE STORE-FRONT-CONSTRUCTION
THE · MICHAELS · ART · BRONZE · CO · COVINGTON · KENTUCKY
TRANSOM HEAD SECTION
DIVISION
CORNER

"Eye Appeal"—"Point of Purchase Advertising"—call it what you may—the attractiveness of a store front or display window presents a combined merchandising and architectural problem.

To help you solve this problem Michaels has prepared an angle tab indexed A.I.A. Folder of tracings for doors, windows and store fronts. From these any store front or show window can be detailed easily, quickly and with assurance of utmost satisfaction to your client.

Welded doors, extruded window frames and store fronts crafted by Michaels not only meet every requirement of the architect and contractor but they have display features that cannot be secured in any other type of construction.

Write for complimentary set of tracings today. Let us figure on your next job.

The finest banks, public buildings, institutions and private estates boast Orna-Metal Work crafted by Michaels.

THE MICHAELS ART BRONZE CO.

Orna-Metal Craftsmen Since 1870

281-287 Court Avenue
Covington, Kentucky

"Spreads like warm butter"

TIGER *for Better Plastering*

More perfect walls and ceilings—in Pure White, Sand Finish, or Beautiful Period Textures—are assured by the use of Tiger Finish. Spreading like warm butter, it is famous for its remarkable plasticity and other desirable working qualities. The result is the exceptionally smooth surfaces, faultless corners and angles that identify so many outstanding fine buildings.

Another Tiger Job

Interior of ARTHUR STRYKER RESIDENCE—River Road, Delvania-on-the Delaware, Pa.

Architect
Wm. W. Slack & Son,
Trenton, N. J.

Plastering Contractor
C. B. Hughes, Morrisville, Pa.

Tiger Finish used exclusively

The KELLEY ISLAND LIME & TRANSPORT COMPANY
World's Largest Producer of Lime
LEADER BUILDING ∴ ∴ CLEVELAND, OHIO

The Famous TIGER FINISH

And—Tiger Mason's, Tiger Agricultural, Tiger Chemical, Tiger All-Purpose Hydrate in 10-lb. packages, and High Calcium and Magnesium Lump Limes. Also Quickslake (ground quicklime) in paper-lined jute sacks.

THE CAST STONE INSTITUTE.

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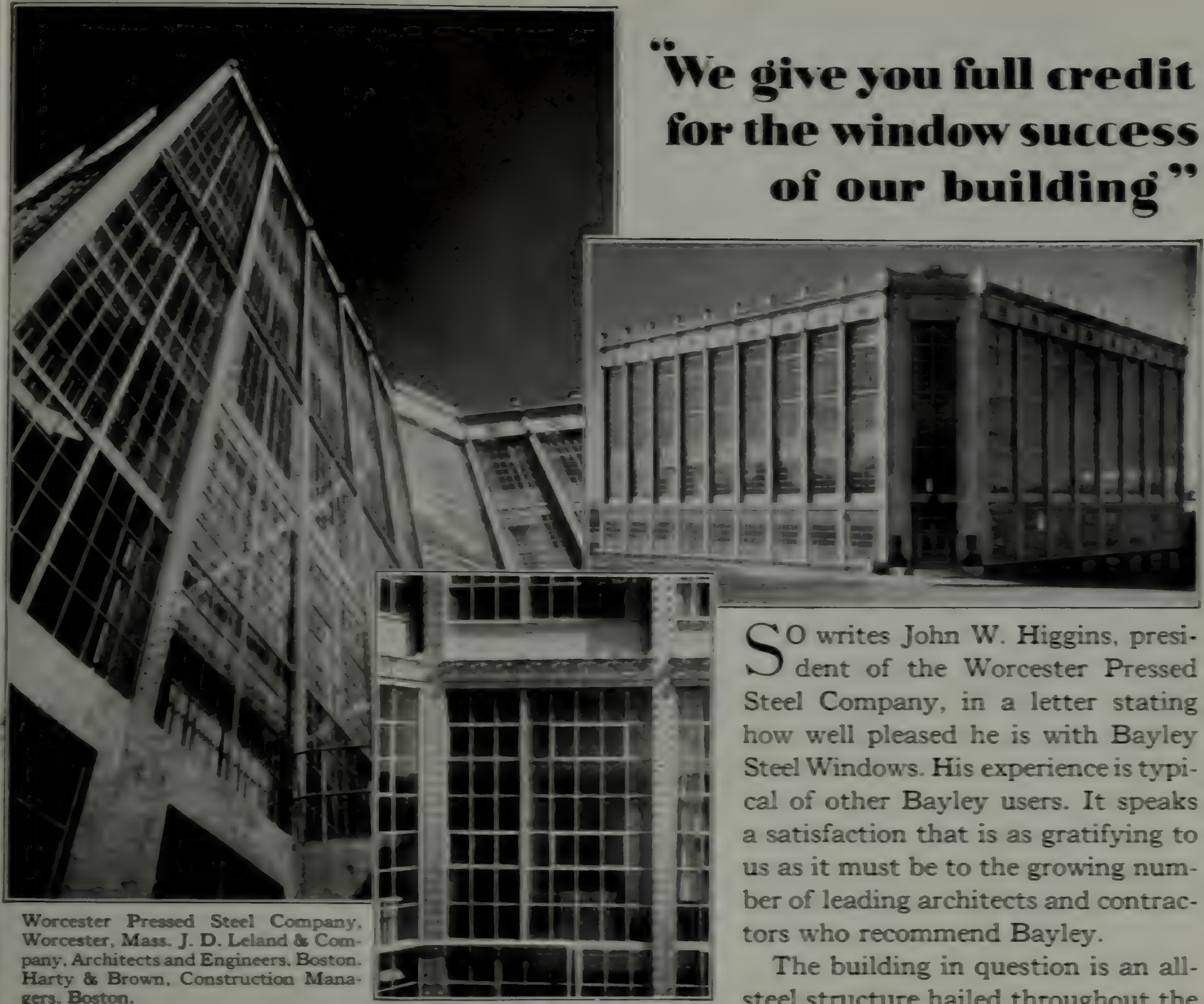
CHICAGO.

A. C. BURTON BUILDING,
HOUSTON, TEXAS.
JOSEPH FINGER,
ARCHITECT.

SURFACE ENRICHMENT, SO EASILY OBTAINED IN CAST STONE, ENHANCES THE EFFECTS OF FLOODLIGHTING.

"We give you full credit for the window success of our building"



Worcester Pressed Steel Company, Worcester, Mass. J. D. Leland & Company, Architects and Engineers, Boston. Harty & Brown, Construction Managers, Boston.

SO writes John W. Higgins, president of the Worcester Pressed Steel Company, in a letter stating how well pleased he is with Bayley Steel Windows. His experience is typical of other Bayley users. It speaks a satisfaction that is as gratifying to us as it must be to the growing number of leading architects and contractors who recommend Bayley.

The building in question is an all-steel structure hailed throughout the country as a striking innovation in industrial design. Bayley Steel Windows form the walls, being attached directly to the steel columns. The superiorities of Bayley window design, and the fact that the flat T bar construction lent itself so well to the architectural harmony of the building, were important considerations in choosing Bayley windows. Incidentally, in all door openings Bayley Tubular Steel Doors, noted for their efficiency, durability and good appearance, are used.

Bayley engineering cooperation, thorough and helpful, is always an added assurance of entire satisfaction. It is available in following through to the final completion of every job, and not only in preparing plans and in writing specifications. It is a service that appeals strongly to architects and construction managers as well as to owners. . . . The William Bayley Company, Springfield, Ohio.

Bayley Steel Products include the following

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- Pivoted Windows
- Pivoted Windows Screened
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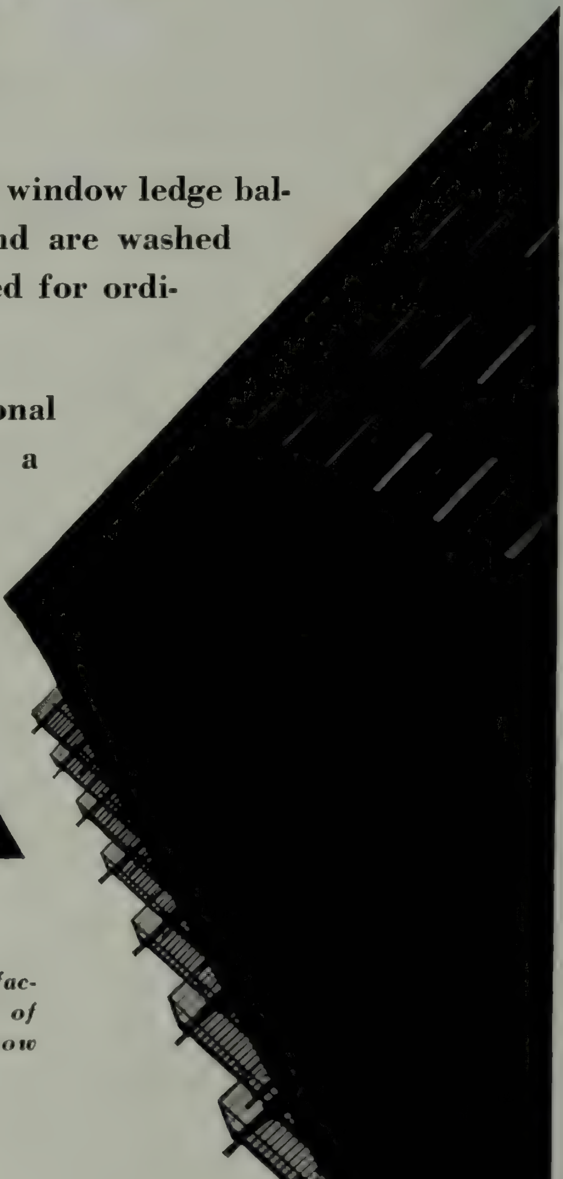
WILLIAMS Reversible Window Equipment banishes window ledge balancing and its catastrophes. Windows reverse and are washed from the *inside* at floor level in half the time required for ordinary old-style windows.

Economical—no high-priced, neck-risking professional window cleaners required; *any* employee can wash a Williams Pivot Sash Window, quickly, easily, safely!

Write for illustrated catalog—no obligation

THE WILLIAMS PIVOT SASH COMPANY
E. 37th St. at Perkins Ave., Cleveland, Ohio



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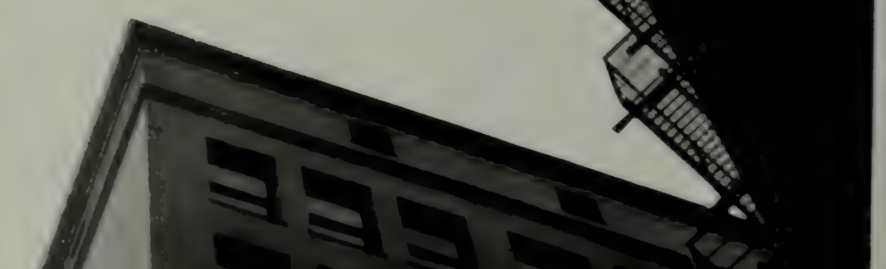
WINDOW EQUIPMENT
Clean Your Windows from the Inside

For 26 Years Manufacturers and Installers of Reversible Window Equipment.



Cornice moulding, door trim and baseboard of stainless steel, by Metal Door & Trim Co. Furniture of stainless steel and other metals, by Oscar Bach. Office in Daily News Bldg., New York, Raymond Hood, Architect.

KA2
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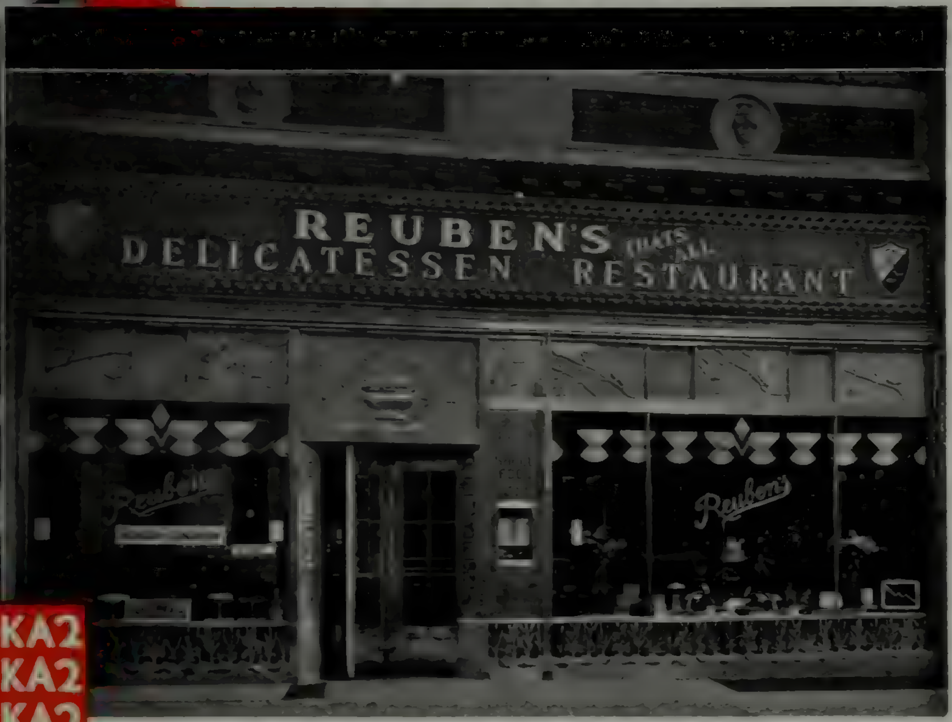
KA2
KA2



Reuben's That's All—Restaurant Front, Philadelphia. Enduro Nirosta with other metals for decoration. Executed by Leober Ornamental Iron & Bronze Works, Philadelphia, Pa.

ENDURO

REPUBLIC'S PERFECTED STAINLESS STEEL

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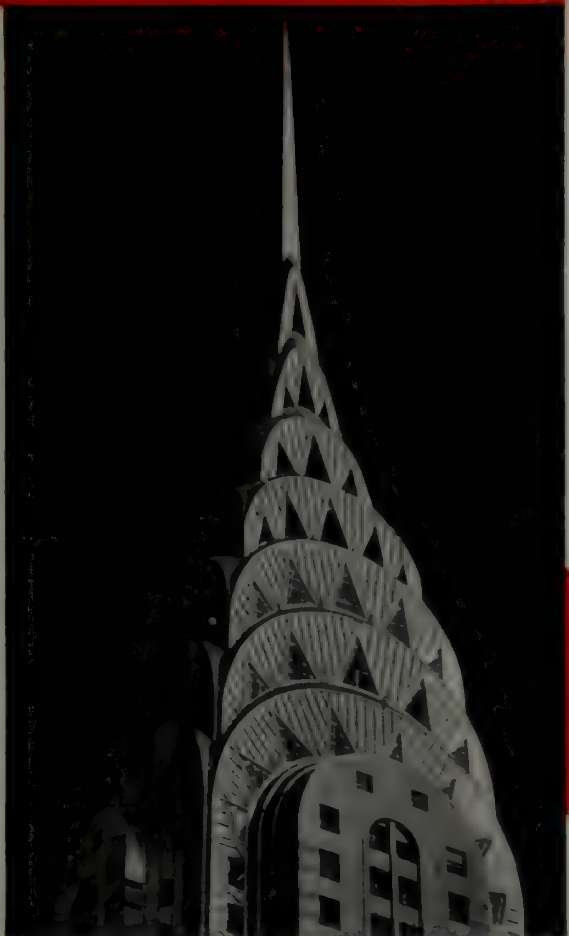
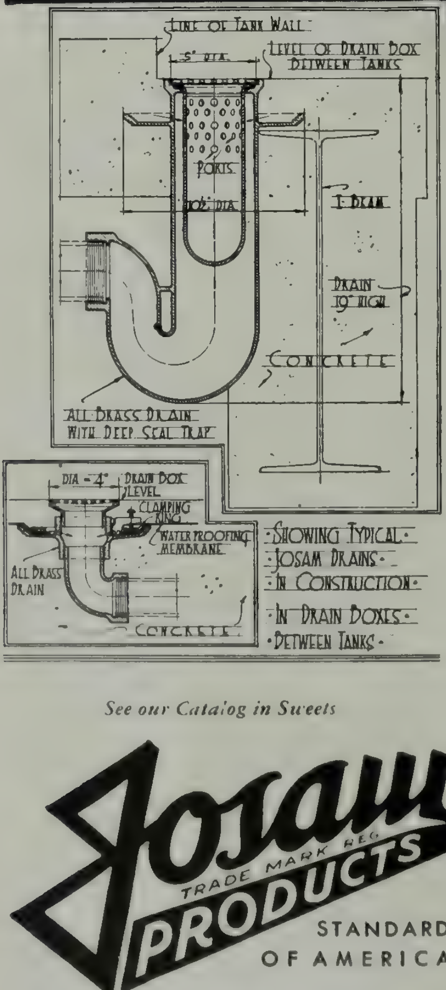


A splendid example of Enduro Nirosta decoration on the Chrysler Tower, New York, William Van Allen, Architect.

JOSAM DRAINS *IN THE UNIQUE* SHEDD AQUARIUM

Graham, Anderson, Probst & White, Architects, Chicago—R. J. Powers, Plumbing Contractors, Chicago—R. C. Wieboldt Company, General Contractors, Chicago



THE Shedd Aquarium in Chicago, marble monument to the most comprehensive collection of aquatic life ever exhibited, presents one of the most unusual Josam drain installations. In addition to the numerous regular floor and roof drain requirements Josam engineers solved the many difficult drain, supply and overflow problems occasioned by the use of thousands of gallons of running water of varied temperatures and kinds. The result of months of study exemplified by this unique structure is a fitting tribute to diversified drain engineering.

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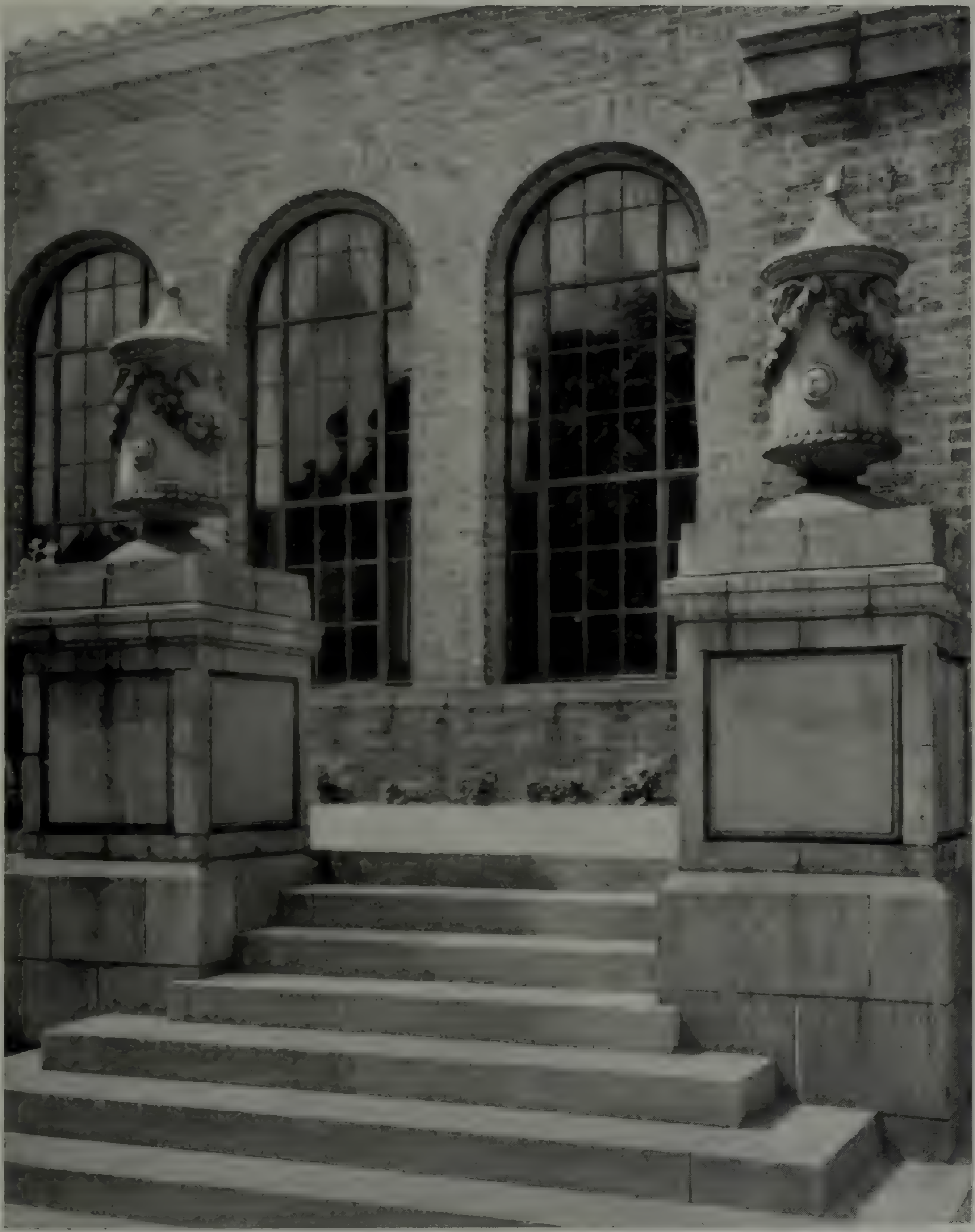

Glenville Branch Library, Cleveland, Ohio Walker & Weeks, *Architects*

STRUCTURAL details of the above windows are shown in the International Casement Co.'s new catalog No. 15, "'Biltin' Sub-Frames with International Casements," copies of which are now being distributed.

INTERNATIONAL CASEMENT CO., INC., JAMESTOWN, NEW YORK

At the left is pictured the Y. M. H. A. Building at 92nd St. and Lexington Ave., N. Y. C. . . . Architects—Necarsulmer & Lehlbach, N. Y. C. Associate Architects—Gehron and Ross, N. Y. C. General Contractor—J. H. Taylor & Co., N. Y. C.; Mechanical Engineers—Jaros & Baum, N. Y. C.; Heating Contractors—Wolff & Munier, Inc., N. Y. C. . . .

Highton, Hart & Cooley Grilles in Hitoncast Rope Design No. 91, as shown below, were installed.

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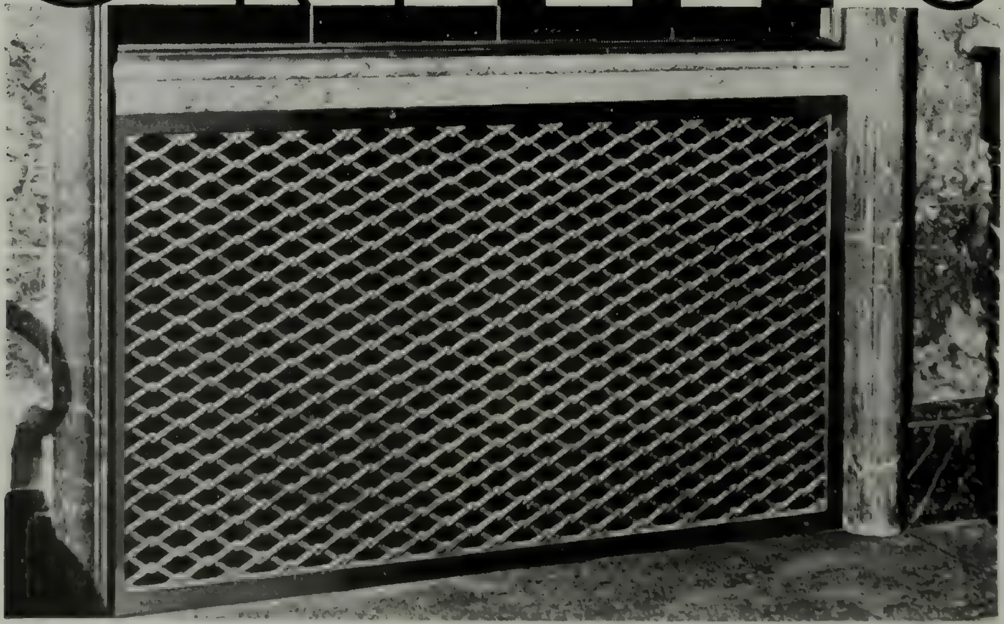
HART & COOLEY
GRILLES



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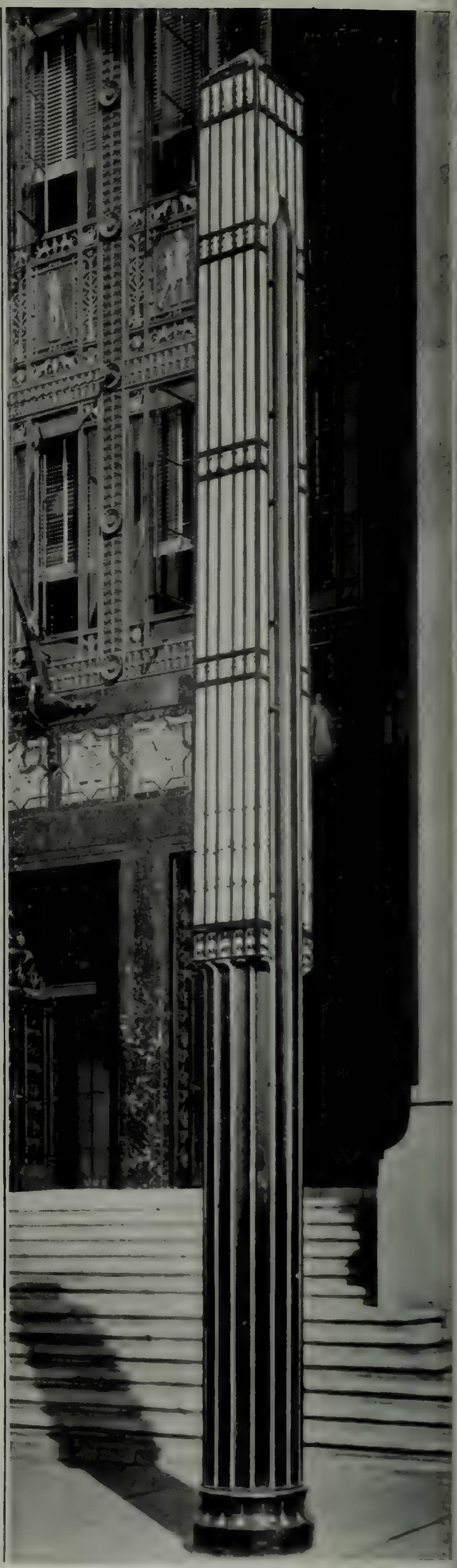

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ZANTZINGER, BORIE *and* MEDARY, *Architects*

SMYSER-ROYER COMPANY

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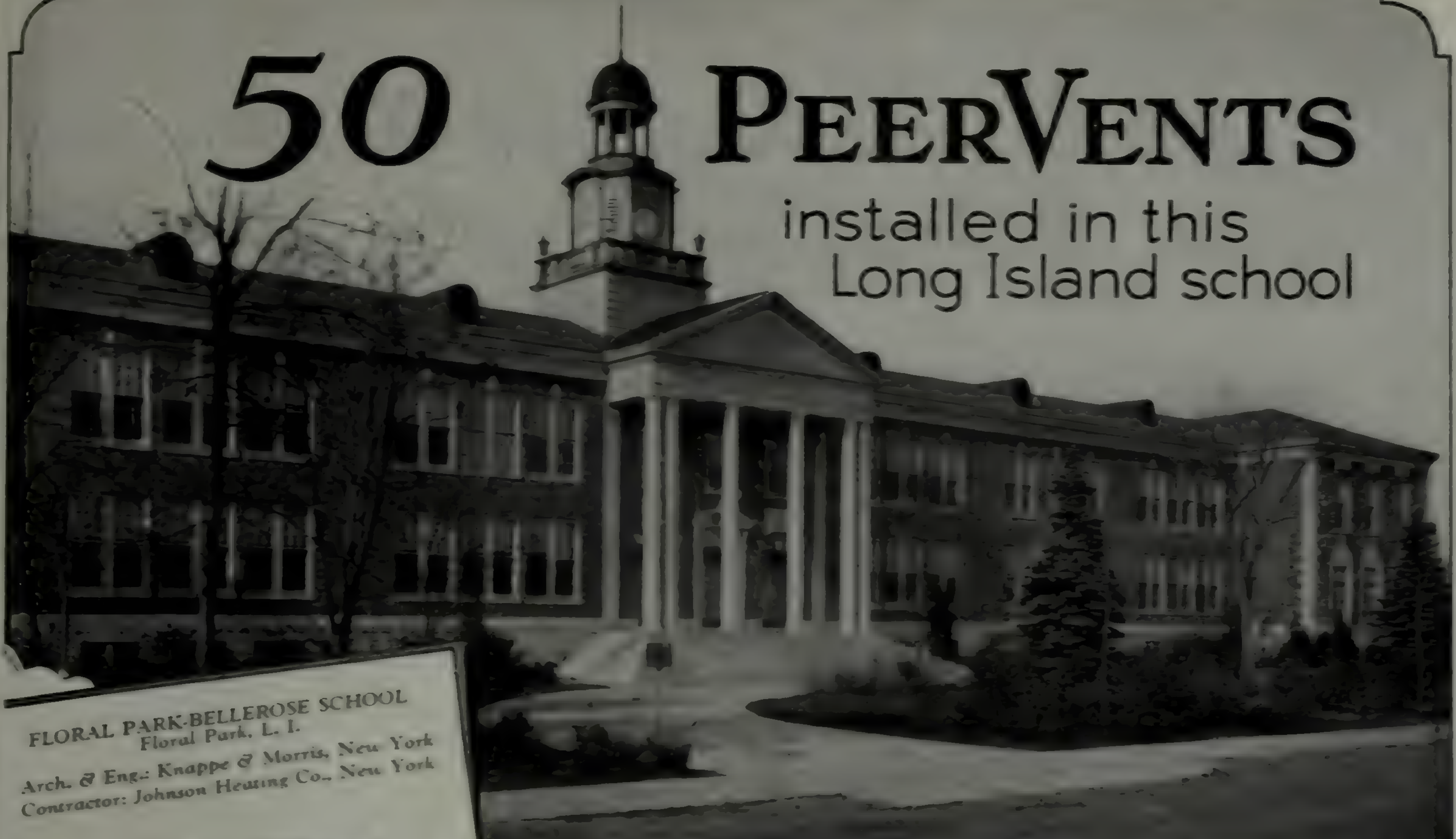

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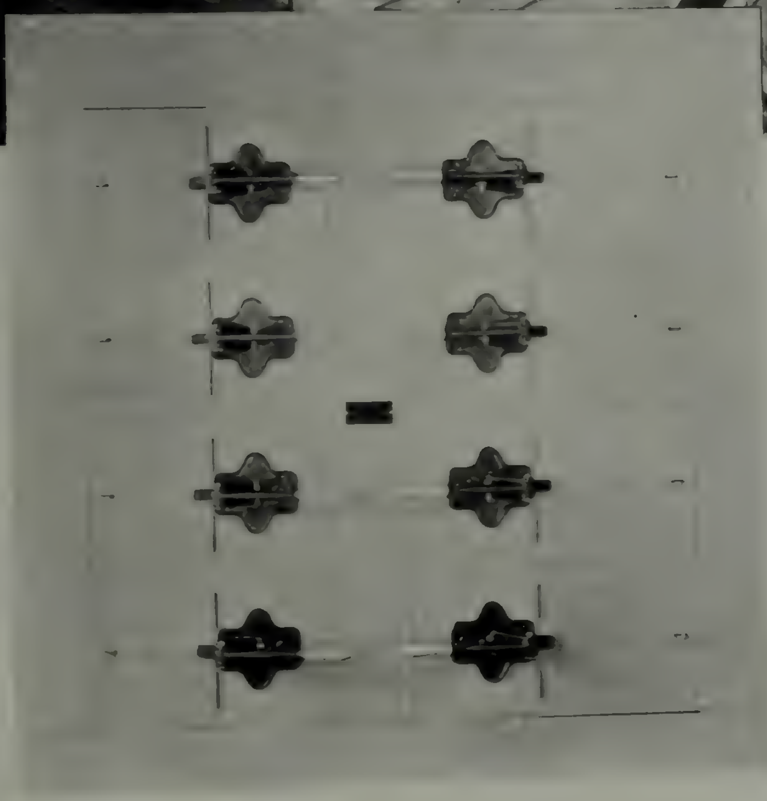

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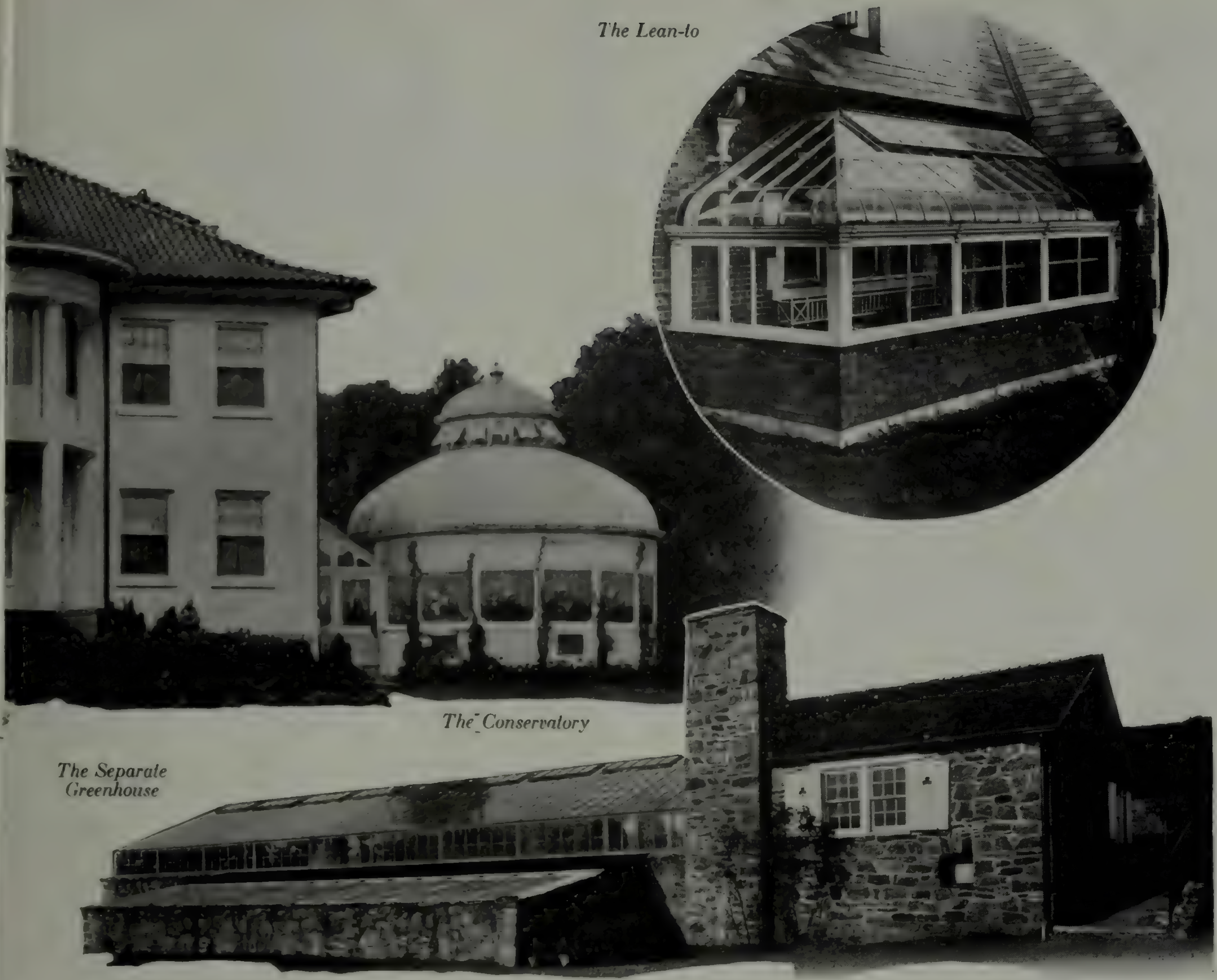

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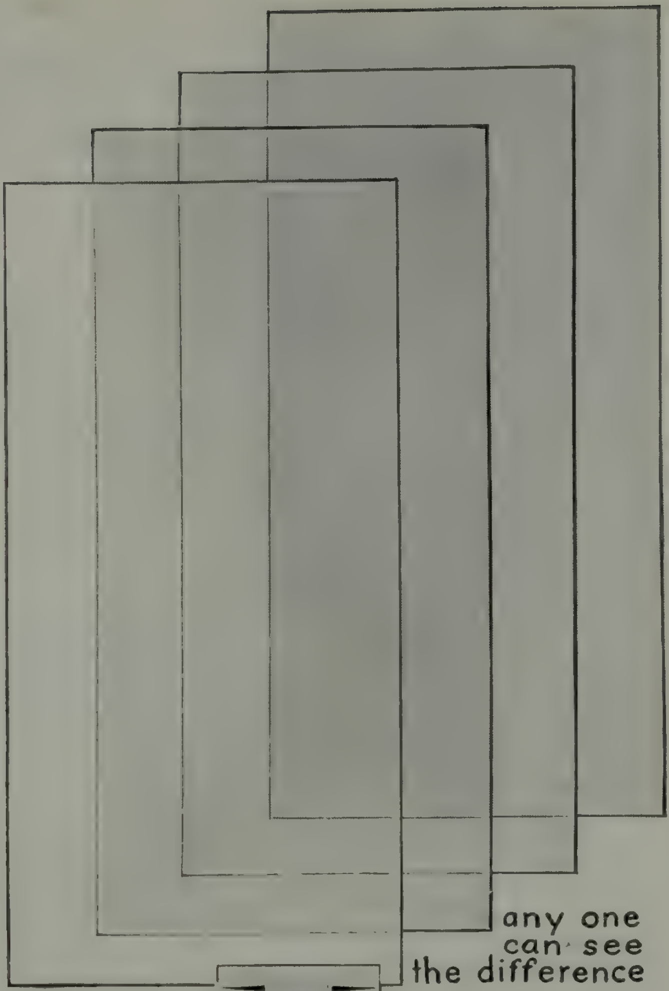
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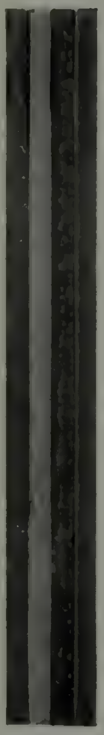
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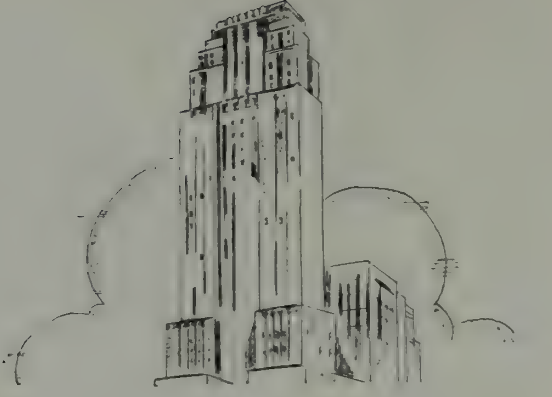

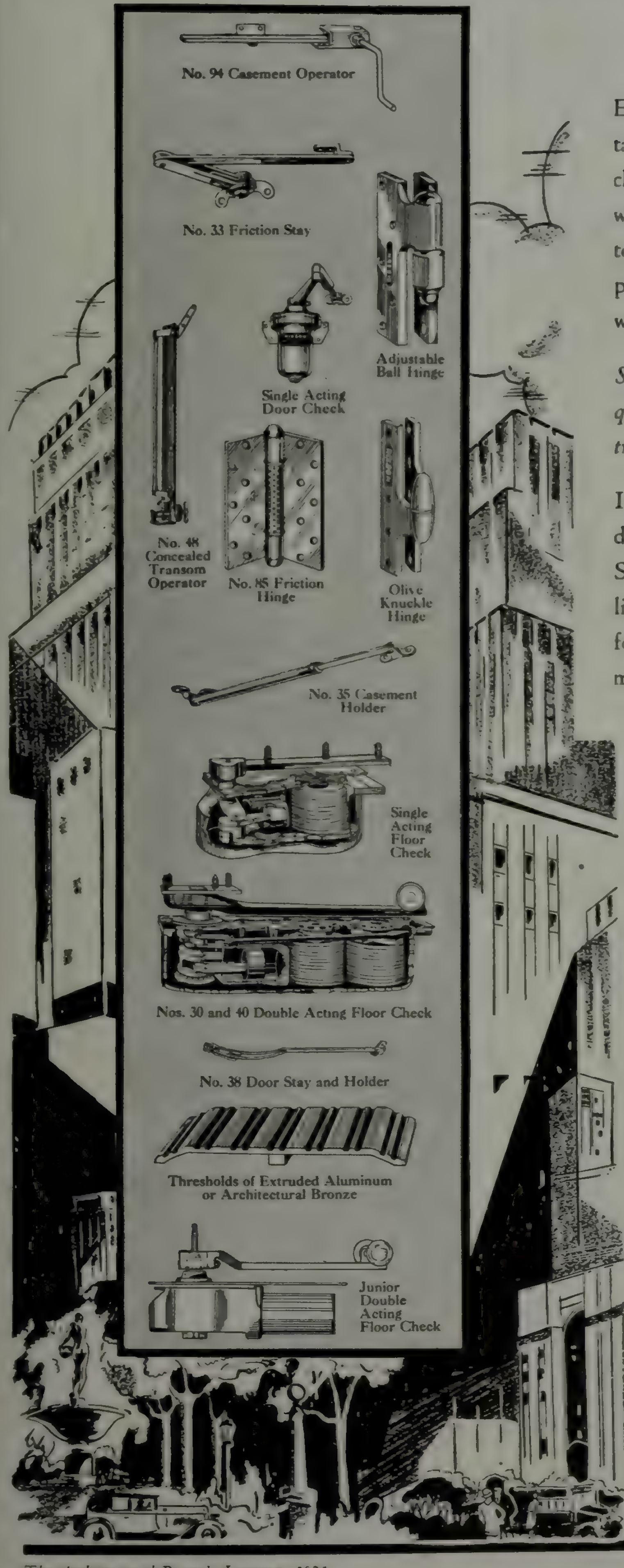
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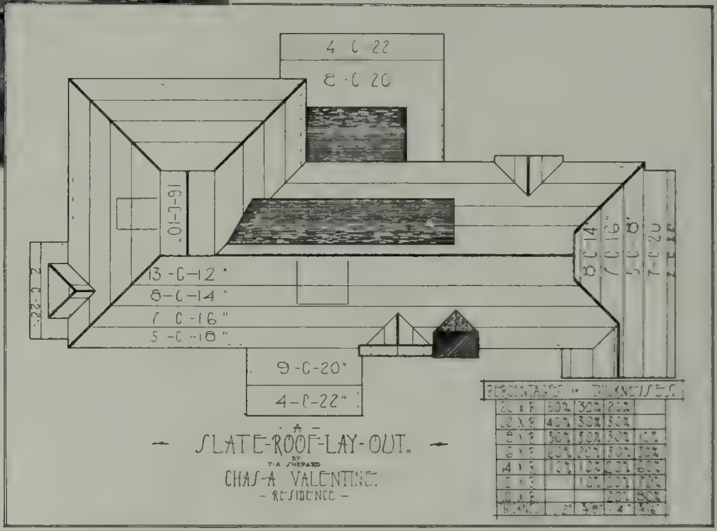

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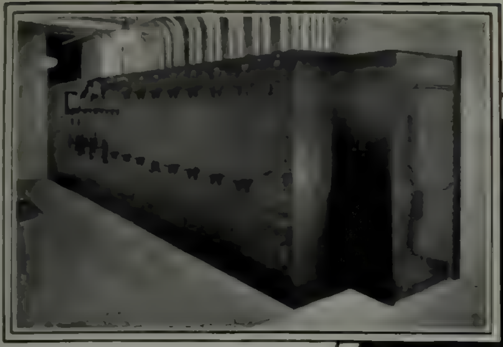

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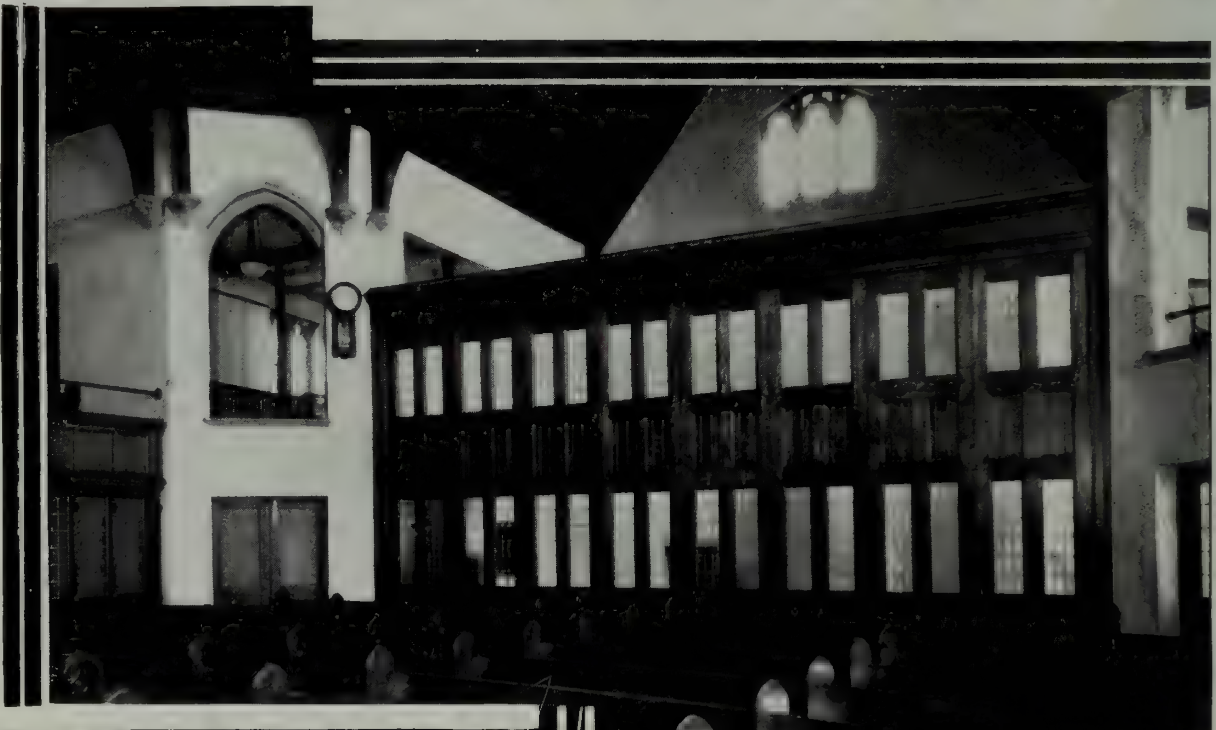

Another view with partition in process of folding

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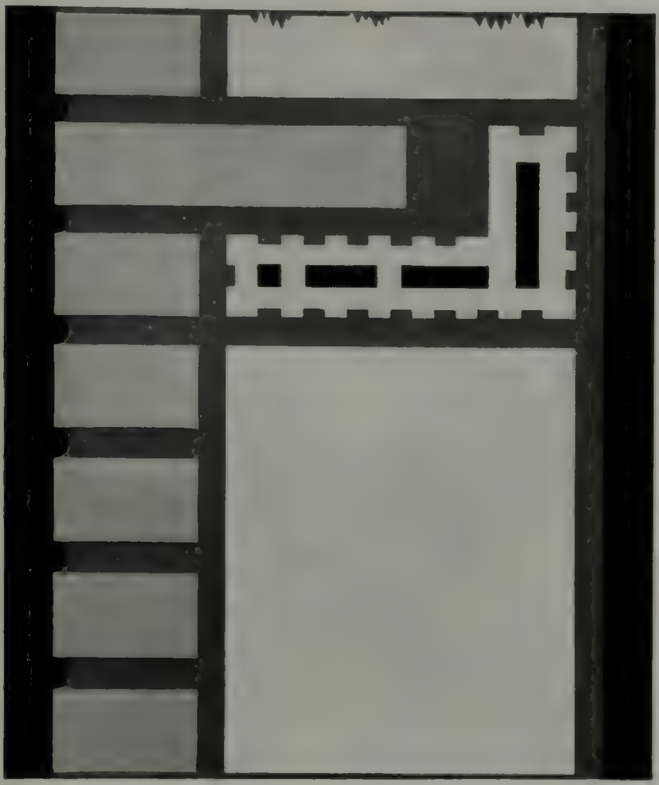

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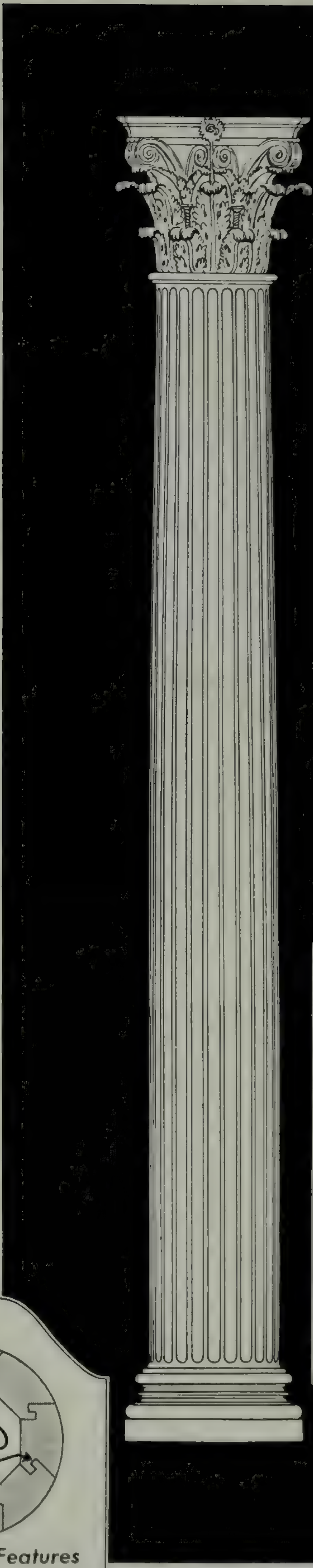

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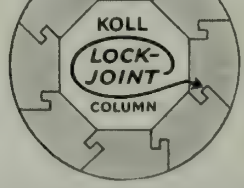

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ANNOUNCES

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2. Offers Free the "Boiler-Burner Book", of new facts and data on the installation of the boiler-burner unit.

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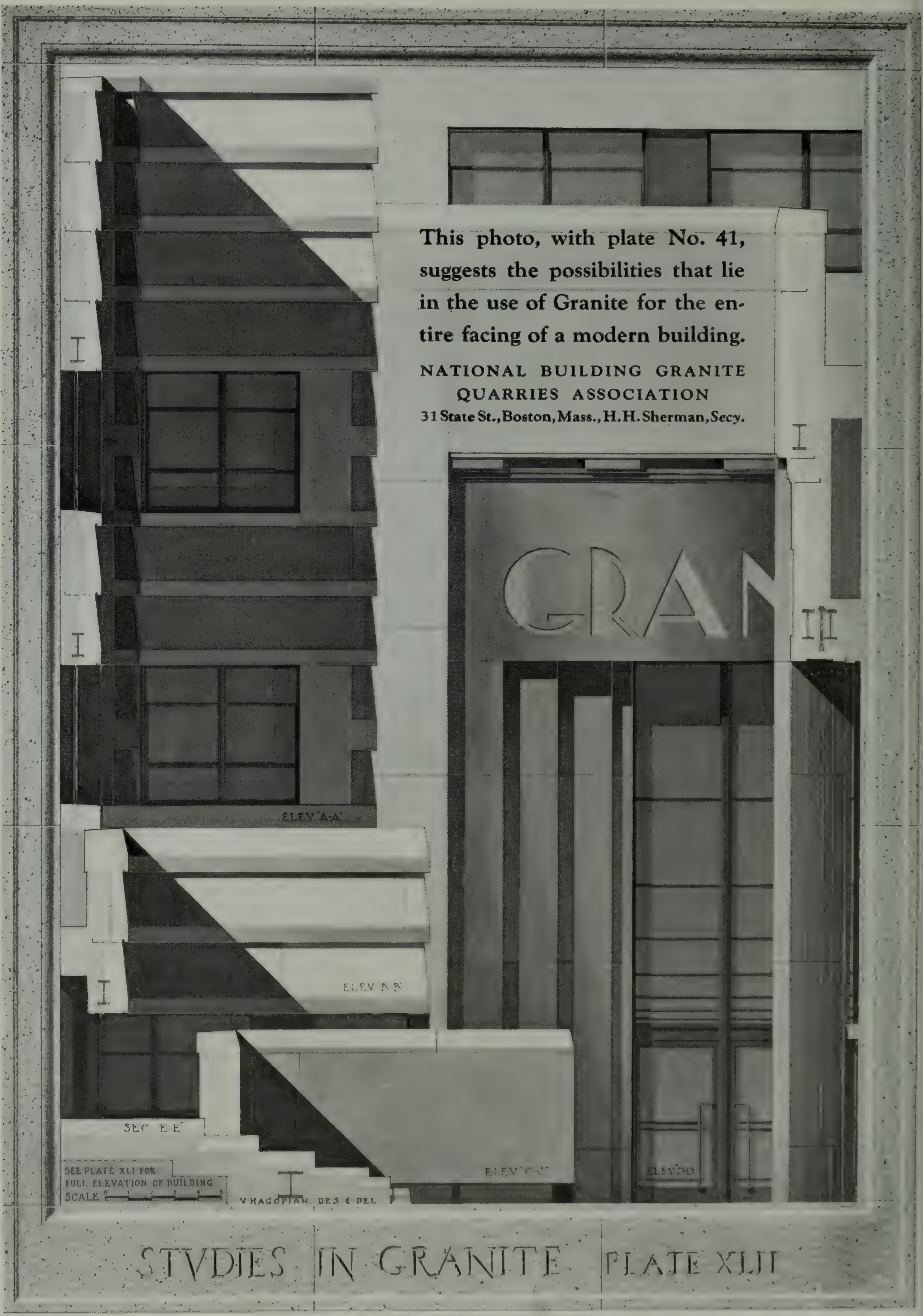

This photo, with plate No. 41, suggests the possibilities that lie in the use of Granite for the entire facing of a modern building.

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31 State St., Boston, Mass., H. H. Sherman, *Secy.*

ANNOUNCEMENTS

A press notice comes to The Architectural Record from Berlin stating that Hannes Meyer has been called to Soviet Russia as professor in Architecture and chief architect for Giprowtus in charge of design for all the technical schools in U. S. S. R. Herr Meyer was formerly director of the Bauhaus at Dessau.

The Society of Arts and Sciences has awarded its gold medal for architecture to Cass Gilbert "for his outstanding contribution to the skyline of New York in the design of the Woolworth Building." Presentation of the award will be made at a dinner given in honor of Mr. Gilbert at the Hotel Astor, Friday evening, January 16.

The Brooklyn chapter of the American Institute of Architects at the November monthly dinner appropriated $100 to aid unemployed draftsmen through the Architects' Emergency Committee. Many members recommended not only that public works be speeded up by the state and city, but that owners where possible should take advantage of prevailing low costs to improve their properties.

F. A. Harris, architect, announces that he has opened a new office in the Youngerman Building, Suite 301, Des Moines, Iowa, and requests that manufacturers' catalogs be sent to him.

R. N. Le Vee, architect, and W. H. Gmeiner, engineer, have opened architectural offices in Appleton, Wisconsin, and would appreciate receiving manufacturers' catalogs.

Samuel Zouri Moskowitz, architect, requests that manufacturers' literature be sent to him at 51 Riverside Drive, New York City, and also at 63 Hazle Street, Wilkes-Barre, Pa.

Black & Bigelow, Inc., engineers, announce the change of their firm name to A. A. Bigelow & Co., Inc. Mr. Archibald Black has resigned as president of the above firm, but will continue his association in the capacity of consulting engineer.

DODGE PLAN ROOMS

Architects are invited to make use of the plan room service maintained by the F. W. Dodge Corporation at the following addresses:

Birmingham, Ala.	415 Watts Building
Boston, Mass.	77 Sumner Street
Buffalo, N. Y.	315 Jackson Building
Chicago, Ill.	173 West Madison Street
Cincinnati, Ohio	622 Broadway
Dallas, Texas	1314 Wood Street
Detroit, Mich.	607 Shelby Street
New Orleans, La.	1210 New Orleans Bank Building
New York, N. Y.	119 West 40th Street
Philadelphia, Pa.	501 Bessemer Building
St. Louis, Mo.	1008 Chemical Building

It is suggested that in having plans blueprinted, one or more sets may be prepared for a Dodge plan room. This service gives the architect a wider range of subbids and material prices and saves congestion of materialmen and subcontractors calling to figure jobs.

CONTRIBUTORS TO THIS ISSUE

Jock D. Peters and Eleanor LeMaire: associated designers who have done much work in the West, notably the interior of Bullock's Wilshire department store in Los Angeles.

Prentice Duell: an archaeologist engaged at present in Egyptian explorations; he has made many mural paintings of excavated Roman works.

Gavin Hadden: an engineer specializing chiefly in stadium design.

Palmer Shannon: a New York photographer who has specialized in the reproduction of drawings by architects and whose cameragraphs of architectural renderings have been exhibited several times at the Architectural League, New York.

CALENDAR OF EVENTS

Jan.-Feb. 1	International Exhibition of Persian Art, Royal Academy, London.
Jan. 8	Underwater illumination. Demonstration of lighting of swimming pools. Illuminating Engineering Society. New York Athletic Club.
Jan. 12-16	American Road Builders' Association Convention and Road Show, St. Louis, Mo.
Jan. 13-16	Building Products and Equipment Exposition, Cleveland Public Auditorium.
Jan. 15	Nominations for Le Brun Traveling Scholarship should be received before this date by the committee, Room 530, 101 Park Avenue, New York City.
Jan. 15-30	Exhibition of cameragraphs by Palmer Shannon, photographer, at the Architectural League, 115 East 40th Street, New York City. Exhibits will include reproductions of architectural drawings and will show the work of New York renderers for the past year.
Jan. 16	Medal award dinner given in honor of Mr. Cass Gilbert at Hotel Astor, New York City, by Society of Arts and Sciences.
Jan. 23.	Beaux-Arts Annual Ball, Hotel Astor.
Jan. 24	Closing date for applications to the Steedman Memorial Traveling Fellowship, Washington University, St. Louis, Mo.
Feb. 1	Closing date for entries for Rome Prize competition. Apply to Roscoe Guernsey, executive secretary, American Academy in Rome, 101 Park Avenue, New York City.
Through Feb.	Annual exhibition of the Architectural League of Greater Miami, Florida.
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.

C. Aerial Photographic Service

THE FEBRUARY ISSUE

●

STADIUM DESIGN
BY MYRON W. SERBY, STADIUM CONSULTANT

The many stadiums and grandstands erected to meet the increasing desire of the public for outdoor sports have witnessed the development of stadium design into a specialized practice. Features such as combination usage of the playing field for various games, orientation, drainage, construction of the stands and seats, nearness and clearance factors of good view, multiple decks for spectators and parked automobiles will be discussed in this article. Excellent photographs of recent projects will also be included.

WASHINGTON HALL, WEST POINT MILITARY ACADEMY
GEHRON AND ROSS, ARCHITECTS

As a mess hall seating hundreds of cadets this building is a recent addition to the West Point reservation. The hall is fitted to an irregular plot of ground and is itself a single vast room with two wings flanking a central kitchen and two serving pantries. The traditional Gothic style has been used to conform with the other buildings and barracks of the academy.

Trowbridge

PUNCH AND JUDY THEATRE, CHICAGO
EUGENE FUHRER, ARCHITECT

This small cinema theatre is a remodeling of an older playhouse, the Central Theatre Auditorium, long a home of light opera and musical productions. Many changes have been wrought for the presentation of motion pictures. One of the two balconies has been eliminated and the other converted into loges. Obstructing columns of the old theatre have been concealed by the new construction, and the general plan rearranged to obtain greater compactness and better acoustical qualities. Interior decorations were designed by Nicolas Remisoff.

Cornell In-Cel-Wood applied to the outer walls serves the dual purpose of insulation and sheathing, and reduces construction costs as well as the cost of heating.

In interiors, to protect beautiful plaster walls permanently from cracks, specify Cornell In-Cel-Wood Lath. A pull of more than 2,000 lbs. per square foot cannot separate plaster from this base. Compare this with other lath or plaster bases!

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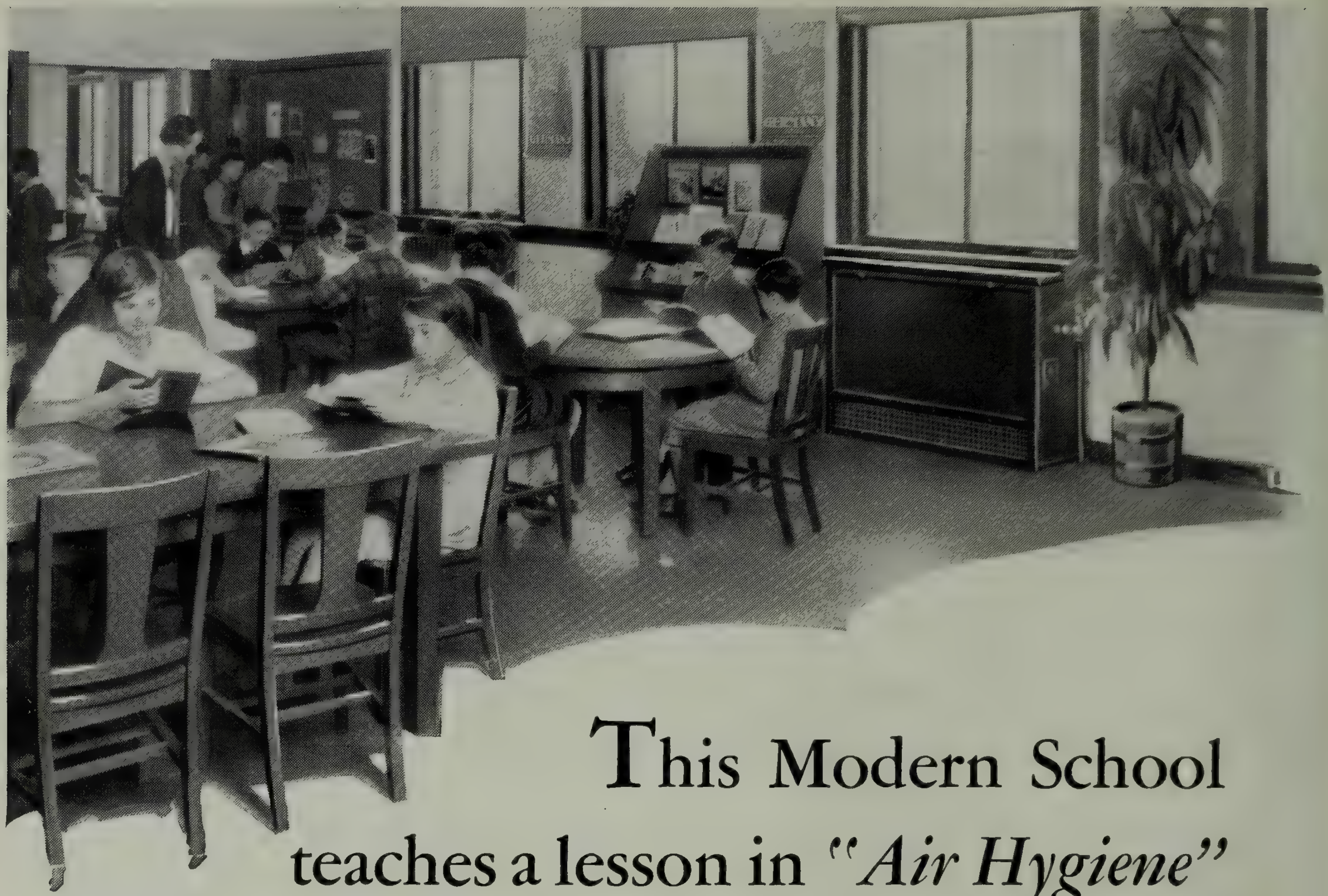
Easy to install—supplied in standard sizes: 4 feet by 6, 8, 9, 10 and 12 feet—all full ½ inch thick. In-Cel-Wood Lath for plaster base 18 inches by 48 inches. The strength and light weight of In-Cel-Wood assure ease and security in handling. Grainless—In-Cel-Wood cuts and nails without splitting or chipping. No special tools are required. For samples of Cornell In-Cel-Wood and In-Cel-Wood Lath with complete details, address CORNELL WOOD PRODUCTS COMPANY, 307 N. Michigan Ave., Chicago, Ill.



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...with 34 Sturtevant Unit Heater-Ventilators

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Studies of school ventilating problems lead repeatedly to the selection of Sturtevant Unit Heater-Ventilators... for old schools as well as new. Our nearest office would welcome the opportunity to lay all the facts before you.

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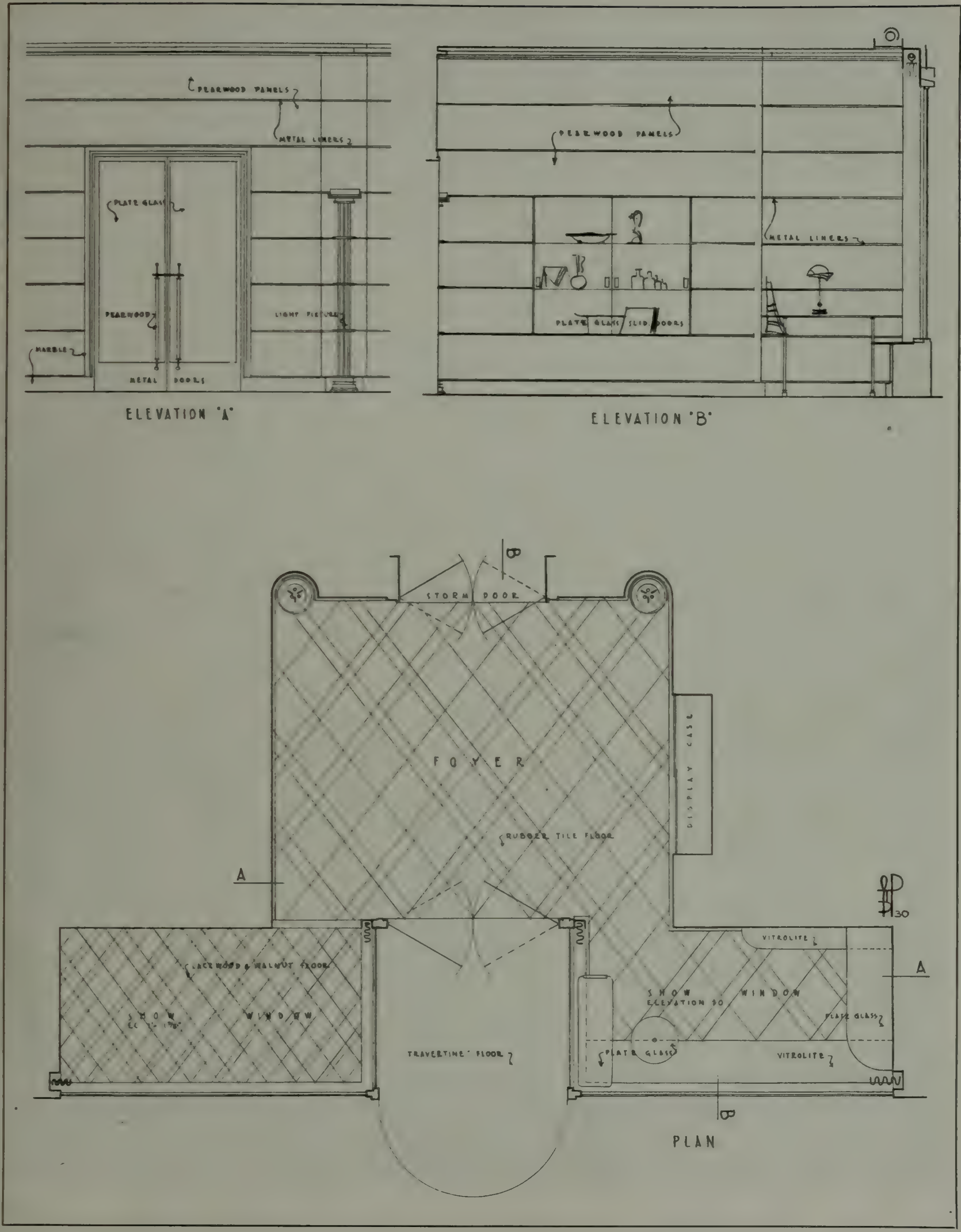
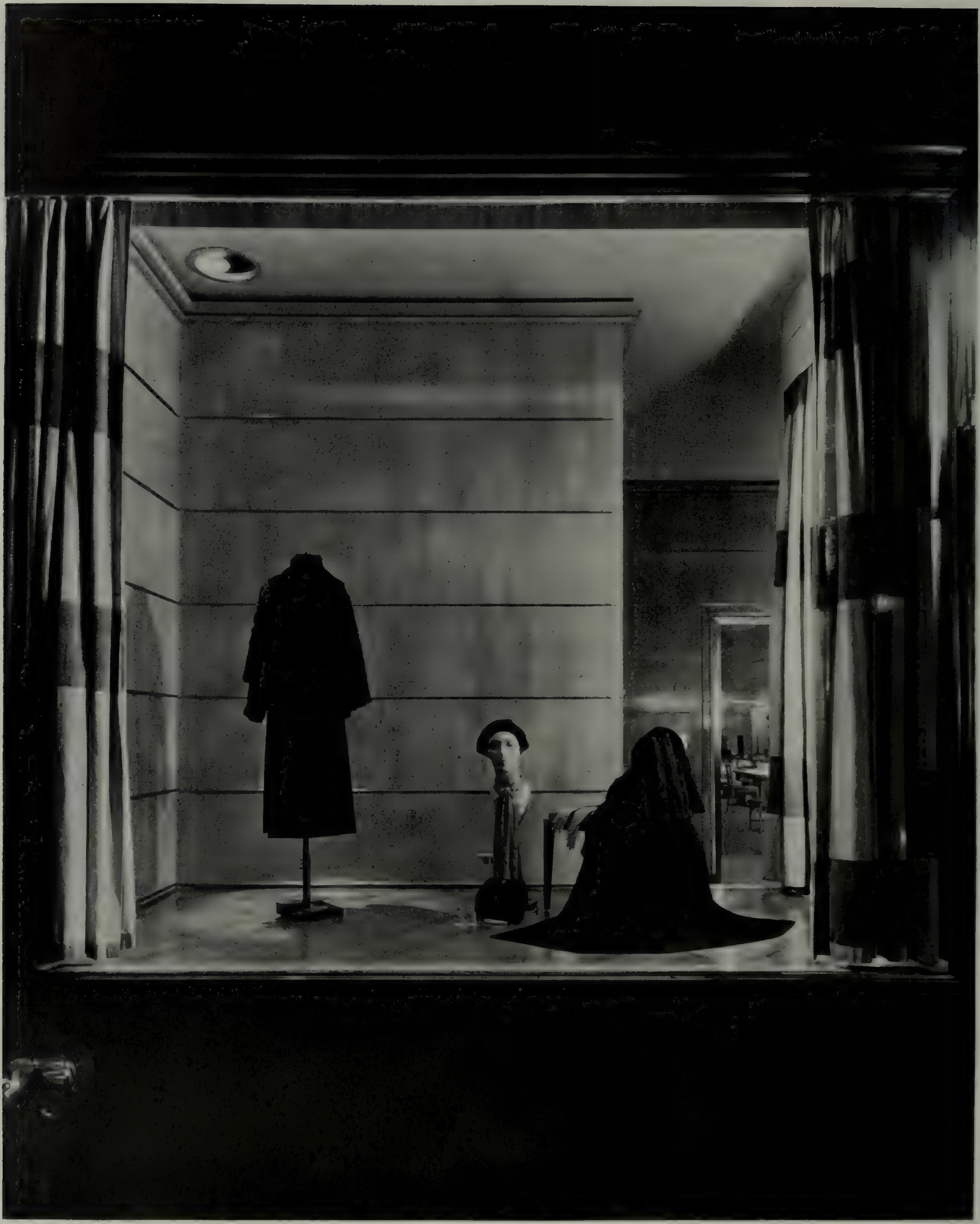


L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Working details of main entrance and show windows. Openness of window permits view into foyer.



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West show window. Background paneled in pearwood. Inlaid floor. Working details on reverse side.

THE ARCHITECTURAL RECORD

AN ILLUSTRATED
MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 NUMBER 1 JANUARY, 1931

L. P. HOLLANDER COMPANY STORE

JOCK D. PETERS, DESIGNER, COLLABORATING WITH ELEANOR LEMAIRE

PROBLEM

To design seven selling floors for a woman's specialty shop; to give a luxurious spaciousness conducive to leisurely selection; to preserve the architectural units and at the same time to satisfy the display and selling needs; to incorporate niches, shelves and illuminated display cases in the architectural treatment because such permanent displays are of utmost importance. Conditions imposed by the merchandising requirements include adequate space for stock and fitting rooms, both of which must be readily accessible to their departments.

PLANNING

The rules of the fire department governing fire exits demand that certain definite space be used on each floor for fire exits. Instead of permitting those exits to interfere with the floor layouts the floors were designed accordingly, giving layouts which help the merchant to present his merchandise with the least possible amount of customer resistance. The usual fixed island counters were not used; instead, the present plan, born of necessity, enables the management to handle the floor sales with the minimum amount of sales help.

ENTRANCE HALL

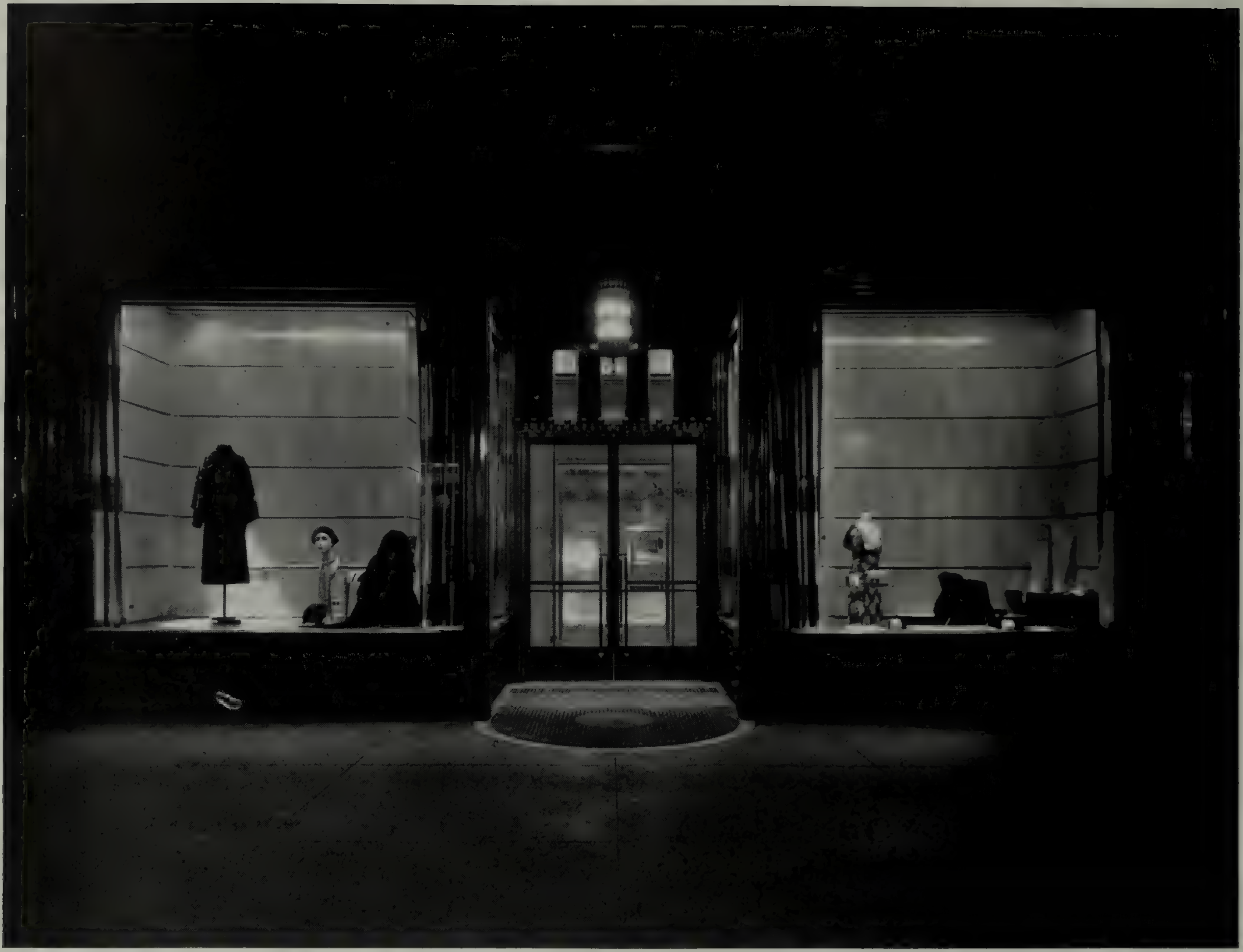
The narrow frontage is reduced further by the need for two special passages, one a service entrance, the other a fire exit. In order to avoid a shut-in appearance the display windows, varying in floor level, were designed with open backs to permit the horizontal pearwood panels of the foyer walls to pass through and to form the background for the display windows. The clear glass inner storm door allows an open view of the main floor.

Privacy in the selection of accessories and perfumes was found necessary. This need was met by designing two small rooms on either side of the entrance. The powder room adjoins the evening bag room; on the opposite side of the entrance is the small perfume room. These rooms are not entirely cut off from view of the shoppers inside the store because of the large circular window and the corner treatment of clear glass.

The wall cases are of beige lacquer finish with magnoliawood backing. The free-standing display and selling cases are of aspenwood with lacquer trim. The decorative red trim in the counter and display cases was employed to tie these various sections together.

THIRD FLOOR

Sportswear. In this department zebrawood with formica inlay was chosen for the fixtures. The big sweep of over-all carpet, designed in blue and gold, contrasts with



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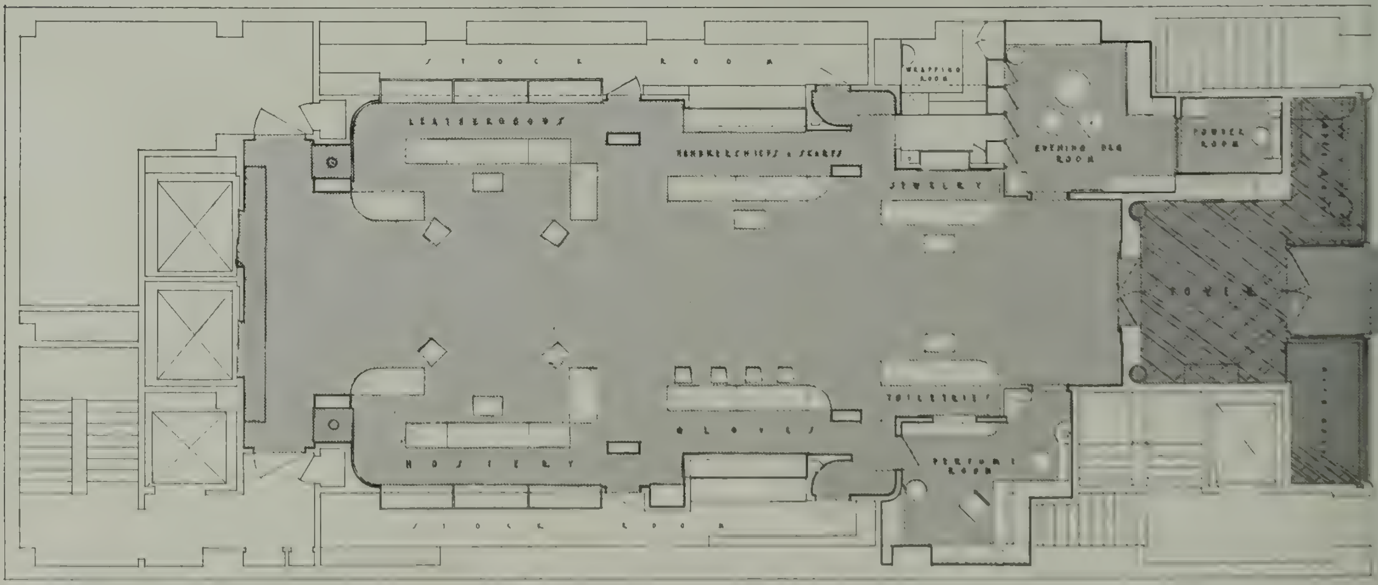
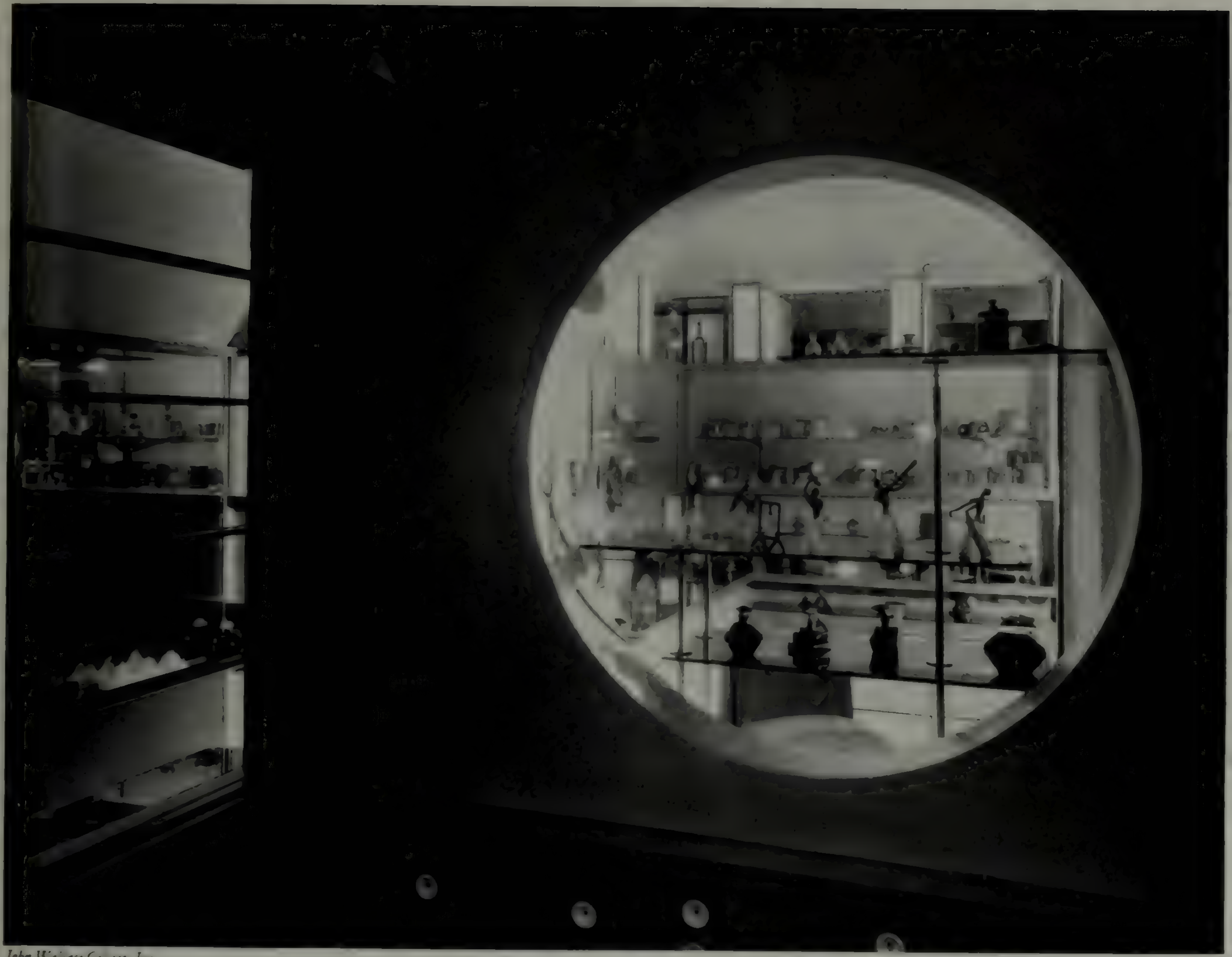
Entrance and show windows.



Ground floor plan.



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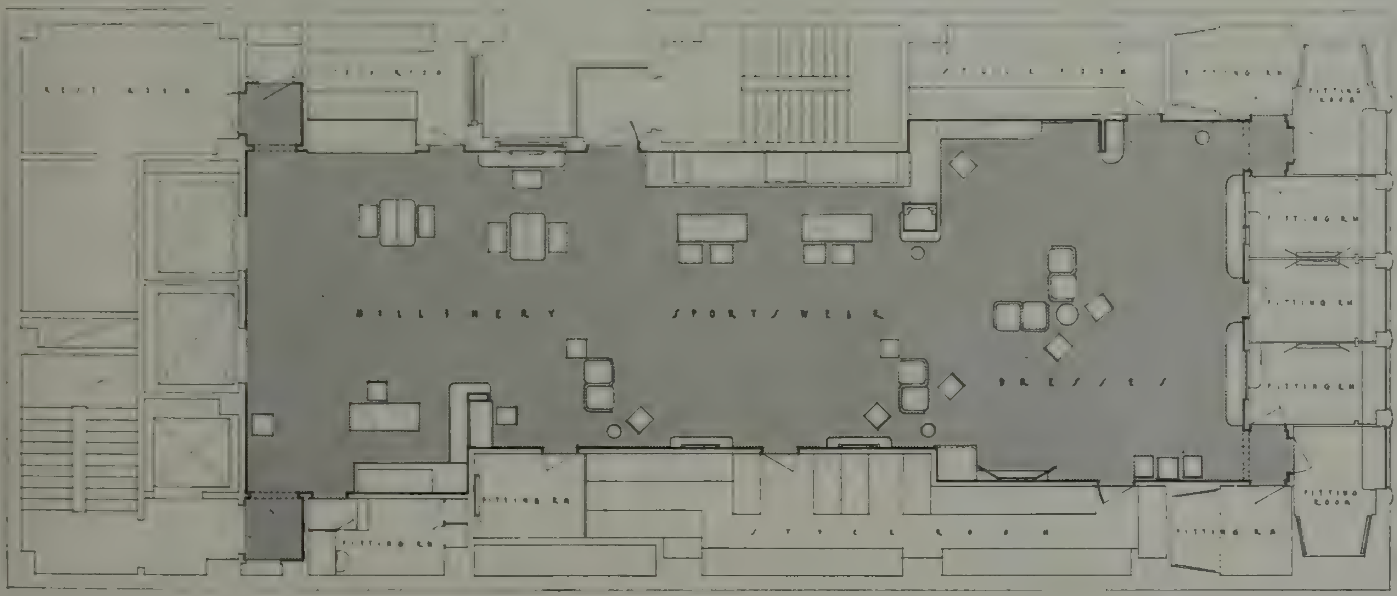
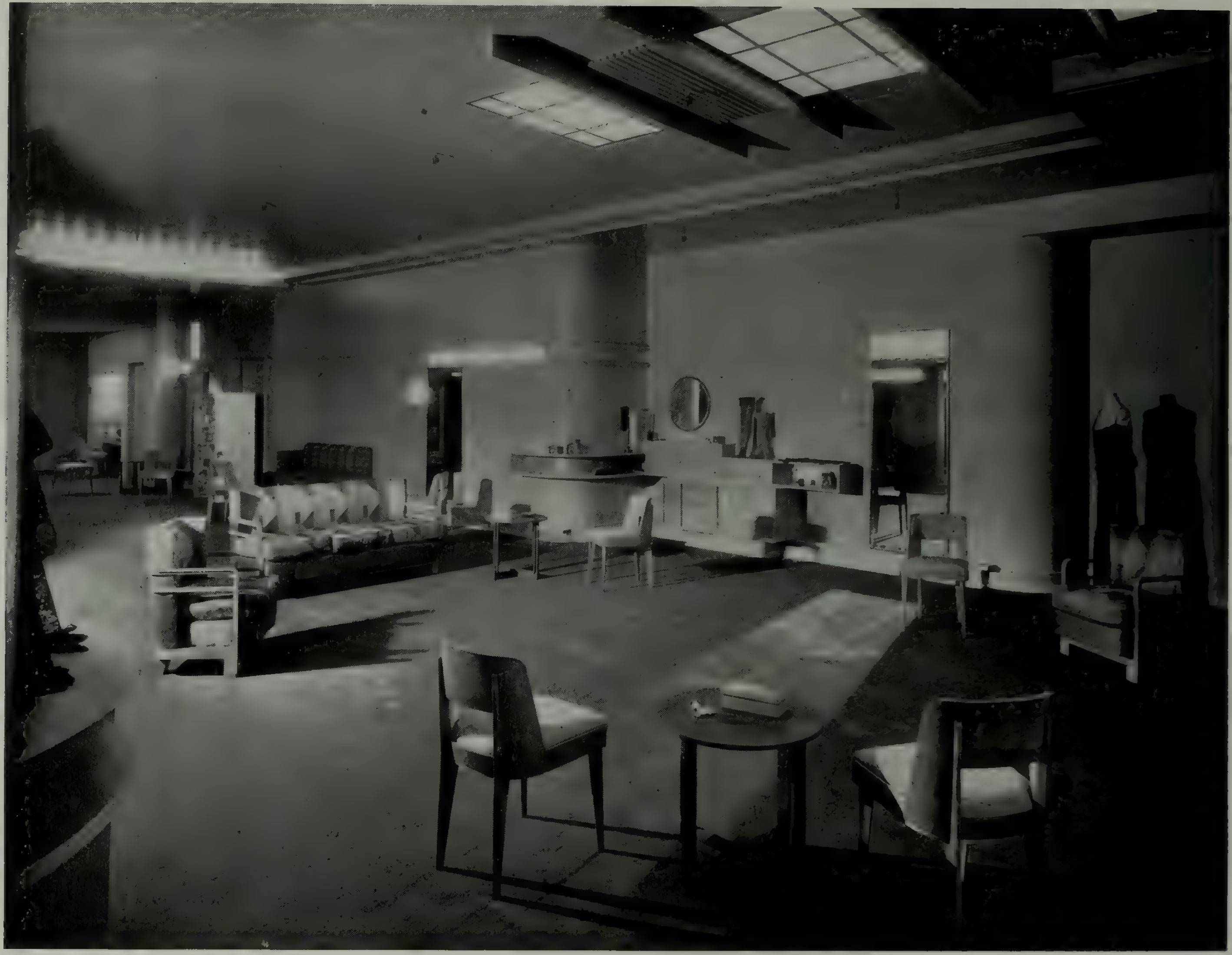
Main floor, looking into perfume room, opposite evening bag room.



Plan of seventh floor.



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Fifth floor, ready to wear dress department. Recessed lighting fixtures in walls and ceilings.

the restful brown tones of the cork walls in the coat section. The open treatment of this floor, with its direct daylight, gives outdoor atmosphere.

FIFTH FLOOR

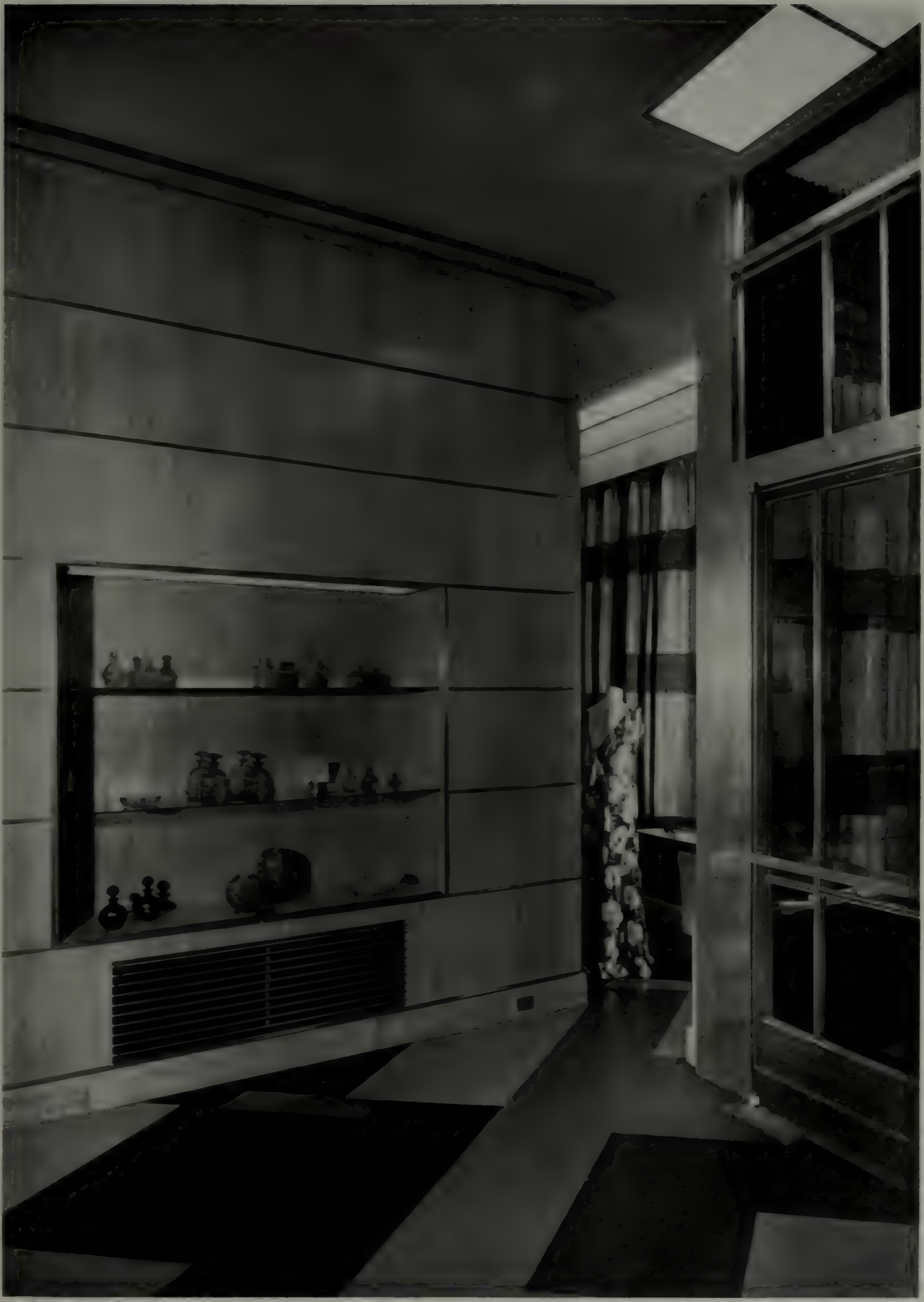
Ready to wear. The merchandising needs of this department demanded a very simple layout. Shelves of aspenwood are placed conveniently for the dress accessories.

SIXTH FLOOR

Custom dressmaking. The salon idea was used here to suggest leisurely, restful shopping. Walls of peach color and carpet of eggplant color add to the sense of quietness so conducive to the uninterrupted selection of models. Spacious selling rooms have been arranged for required privacy. Facilities for the showing of collections are provided for by means of a removable platform located at one of the archways; from this point the manikins may be seen to advantage from all parts of the room.

SEVENTH FLOOR

"*Debonnaire.*" This floor was set apart for college students. Instead of fixed departments with established walled units, the designs called for clearly defined architectural lines to give the necessary segregations. The walls and furniture are treated in black and white relying upon color notes for relief. The furniture is of metal.



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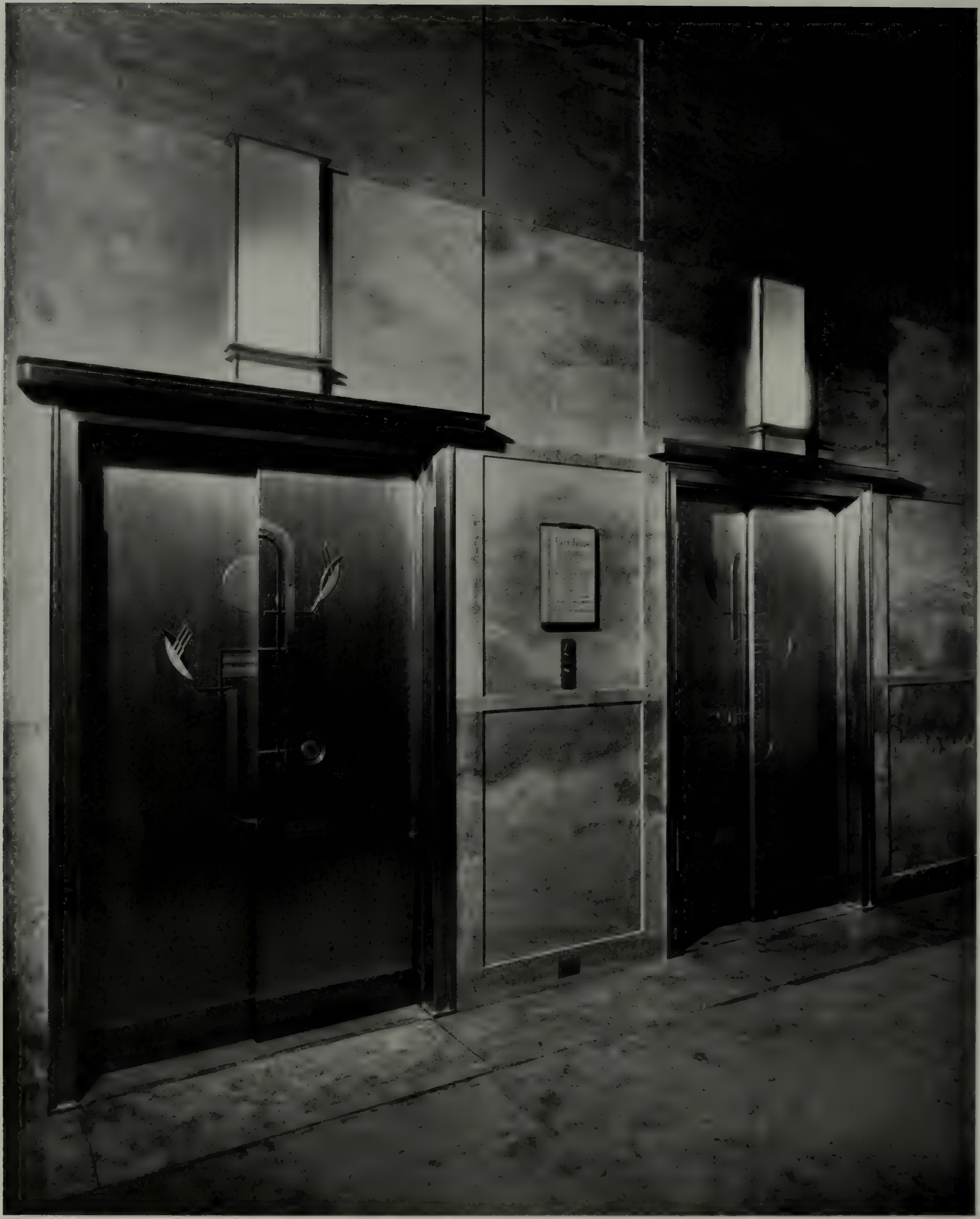
Looking from foyer into open show window. Walls of paneled pearwood with horizontal liners of Benedict nickel. Rubber tile inlaid floor.



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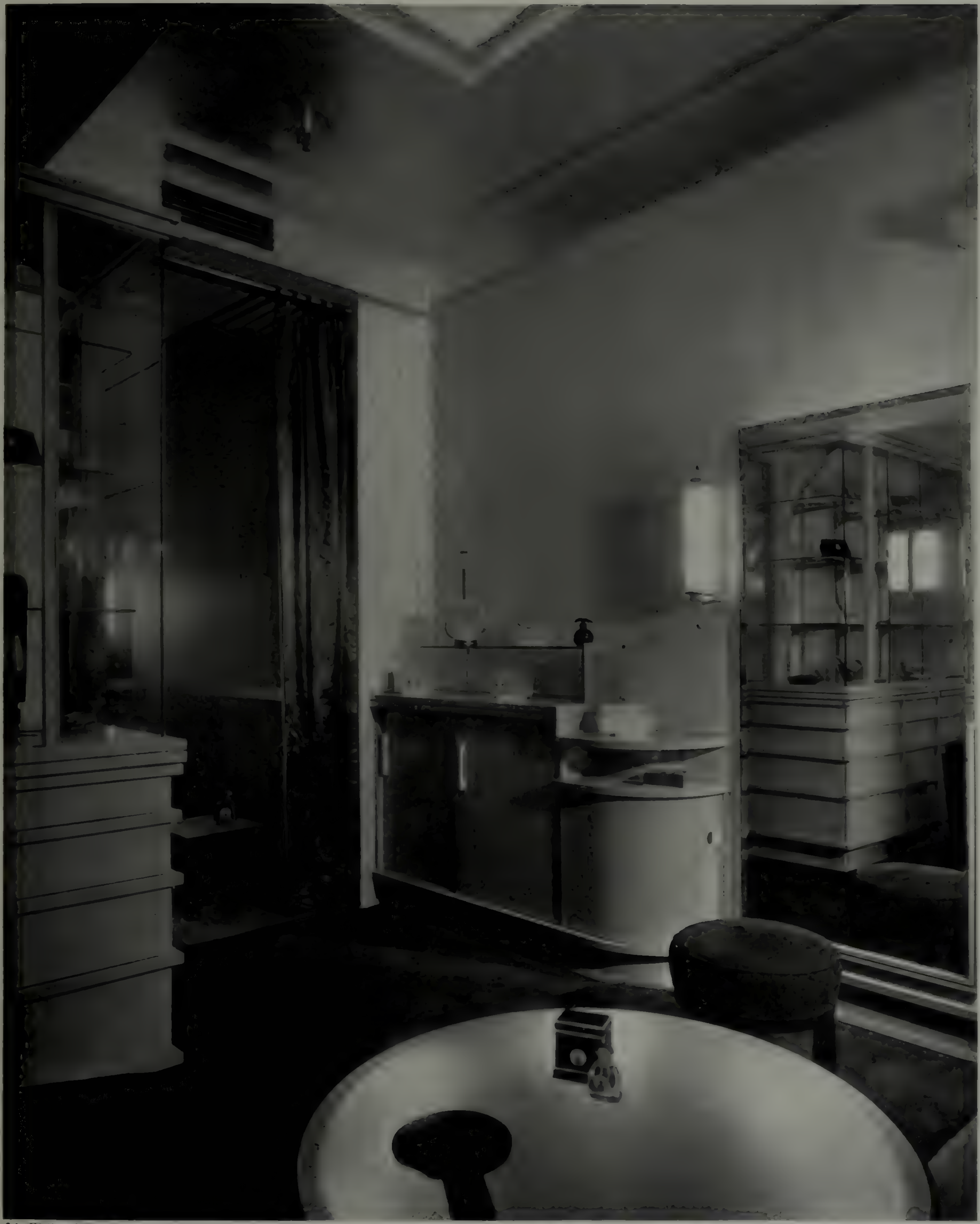
Elevator wall. Doors, casings and trim in varied finishes on Benedict nickel. Walls lined with Crocidolite marble.



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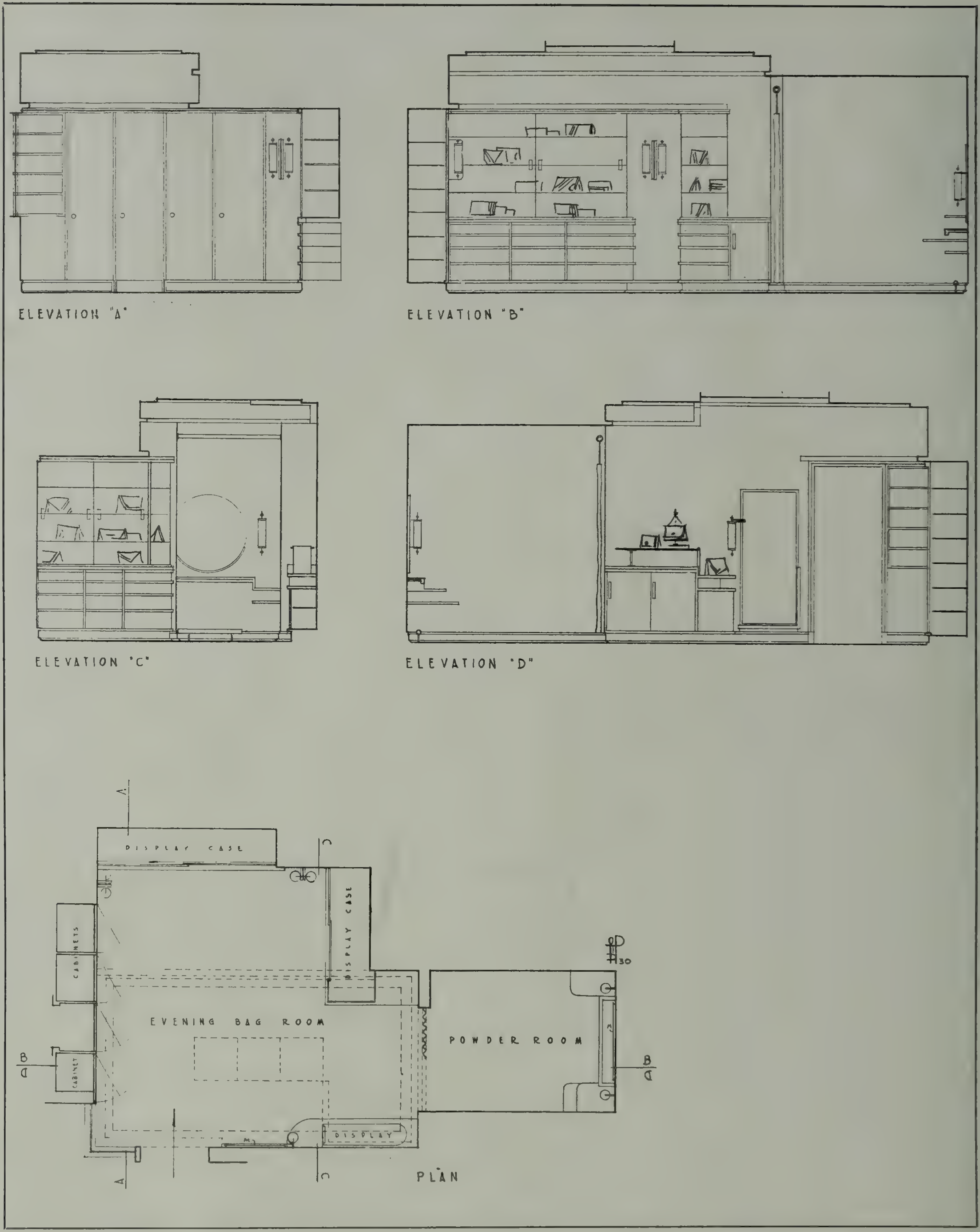
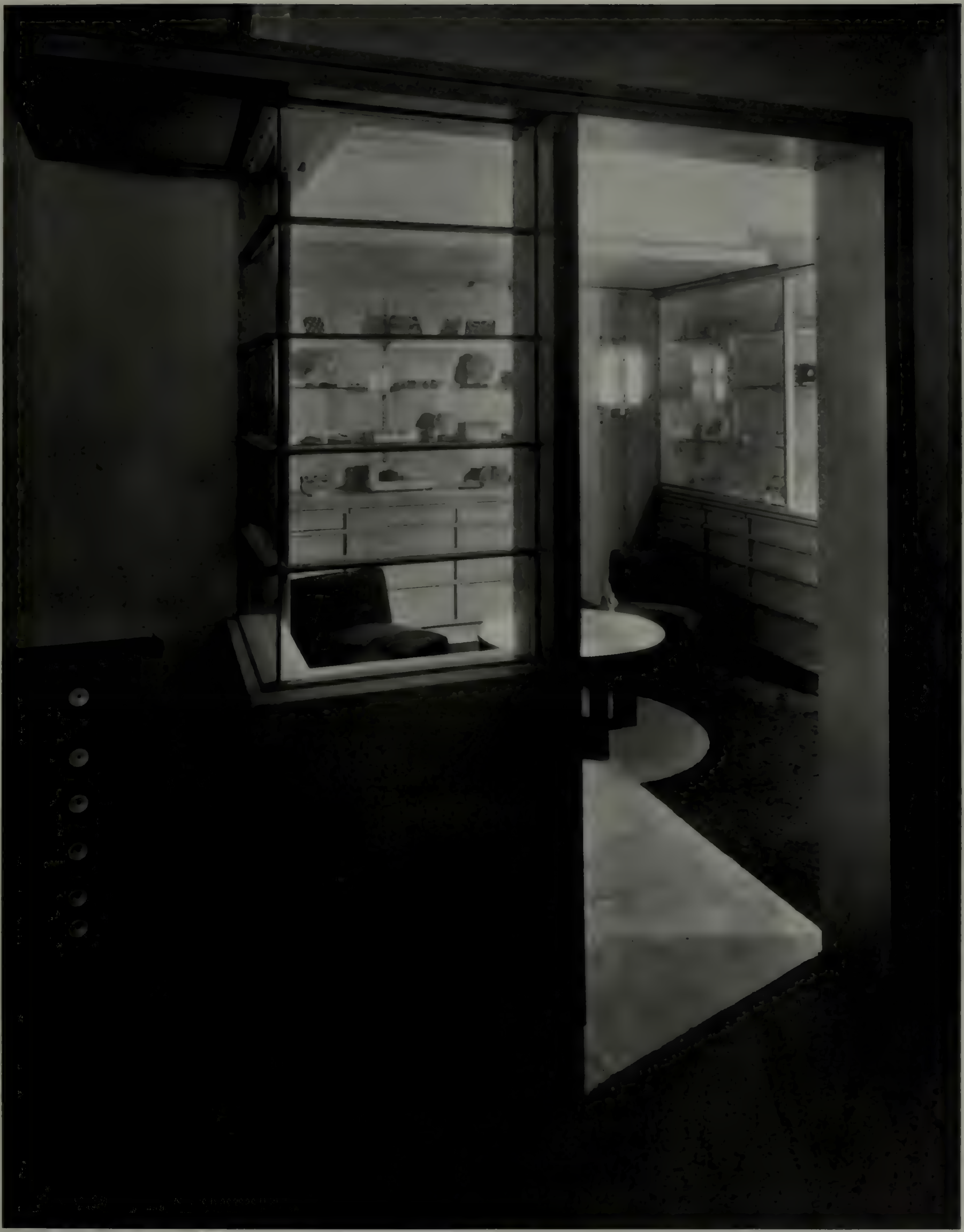
Main floor, inside accessory and evening bag room with adjoining powder room. Low display table with illuminated glass top.



L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

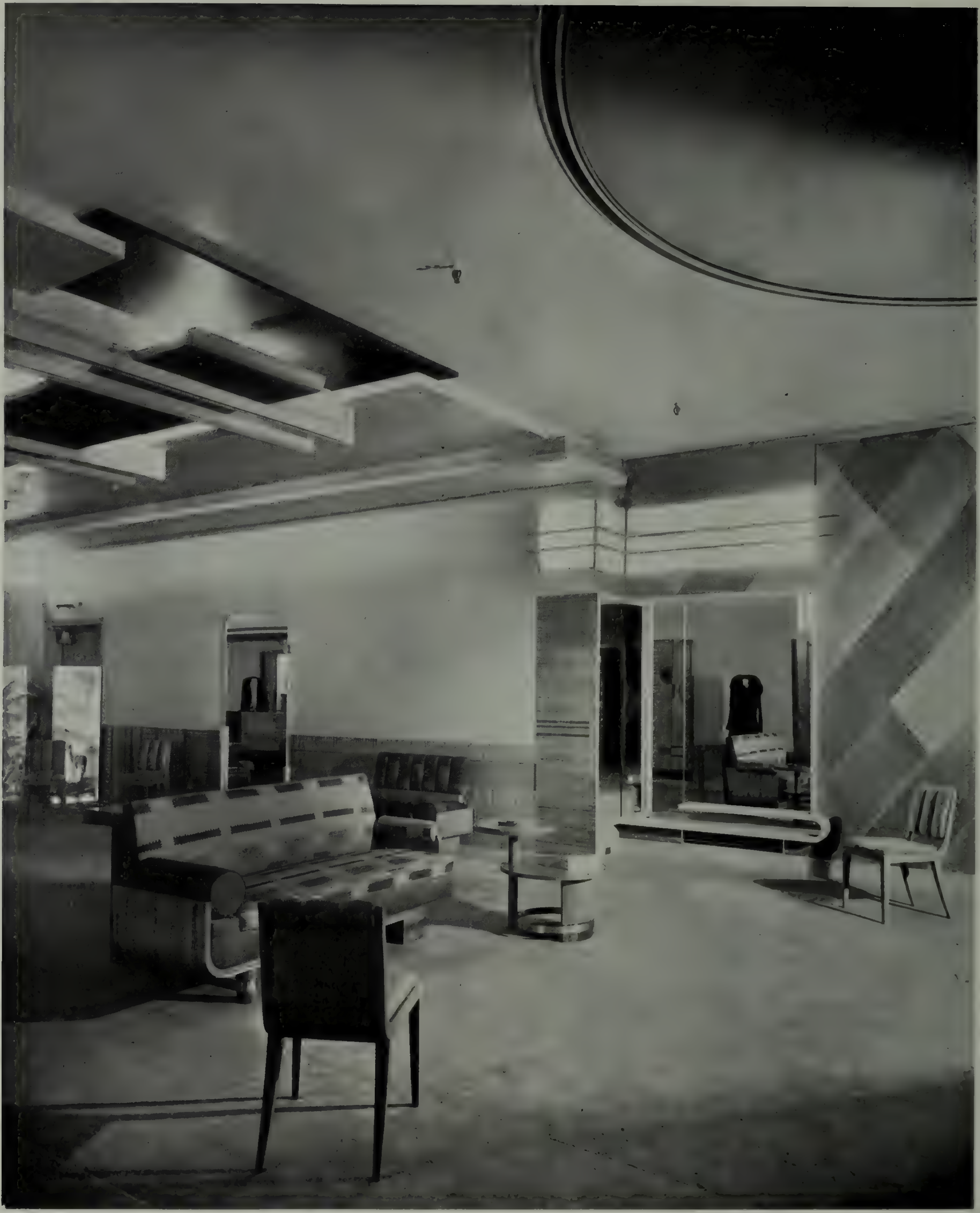
Working details of evening bag room, main floor.



John Wallace Gillies, Inc.

L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Main floor, looking into accessory and evening bag room. Corner treatment in clear plate glass with horizontal molds.



John Wallace Gillies, Inc.

L. P. HOLLANDER COMPANY
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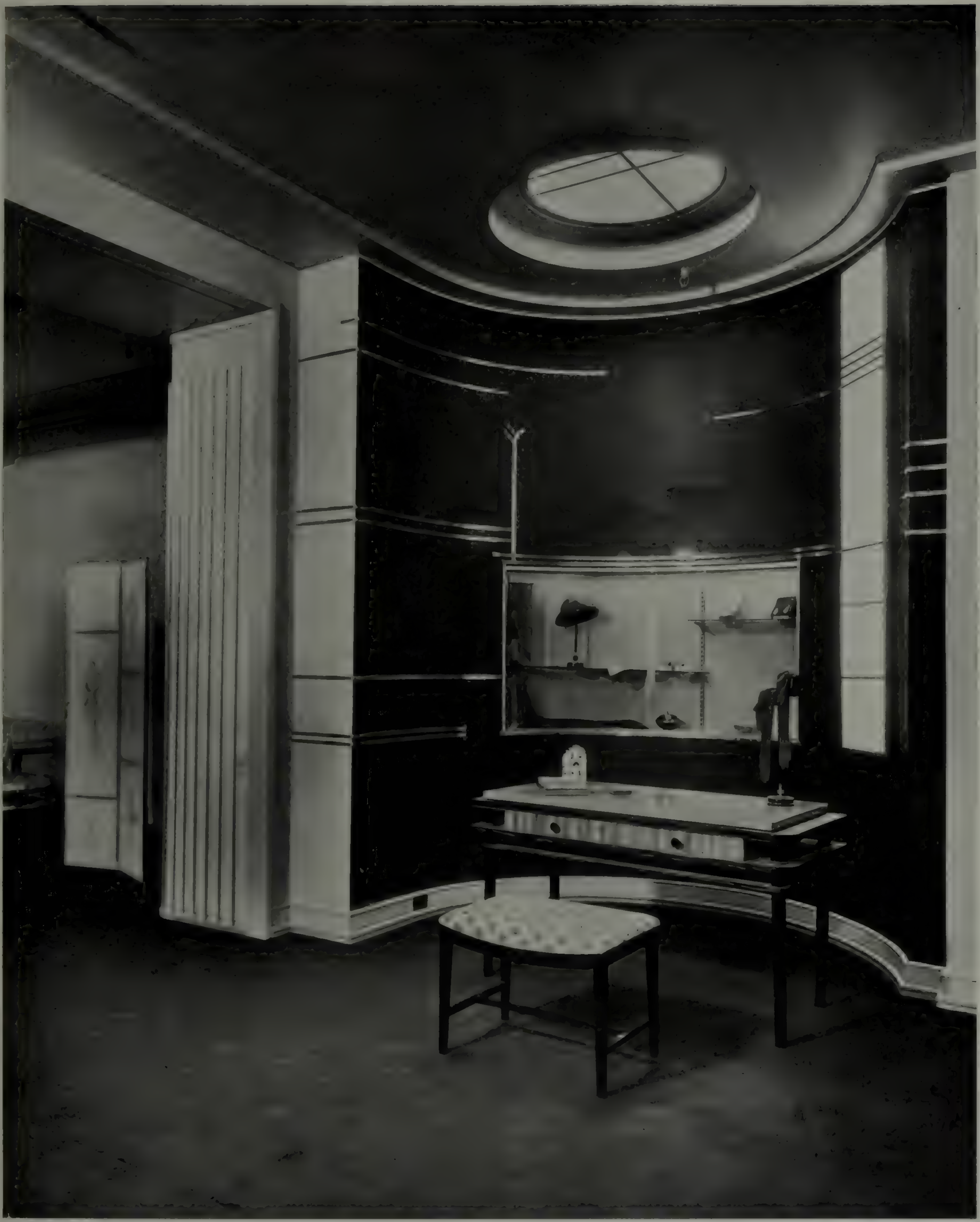
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Third floor, coat department. Walls of natural cork inlay. Wainscot panel in zebrawood with vermilion wood inserts.



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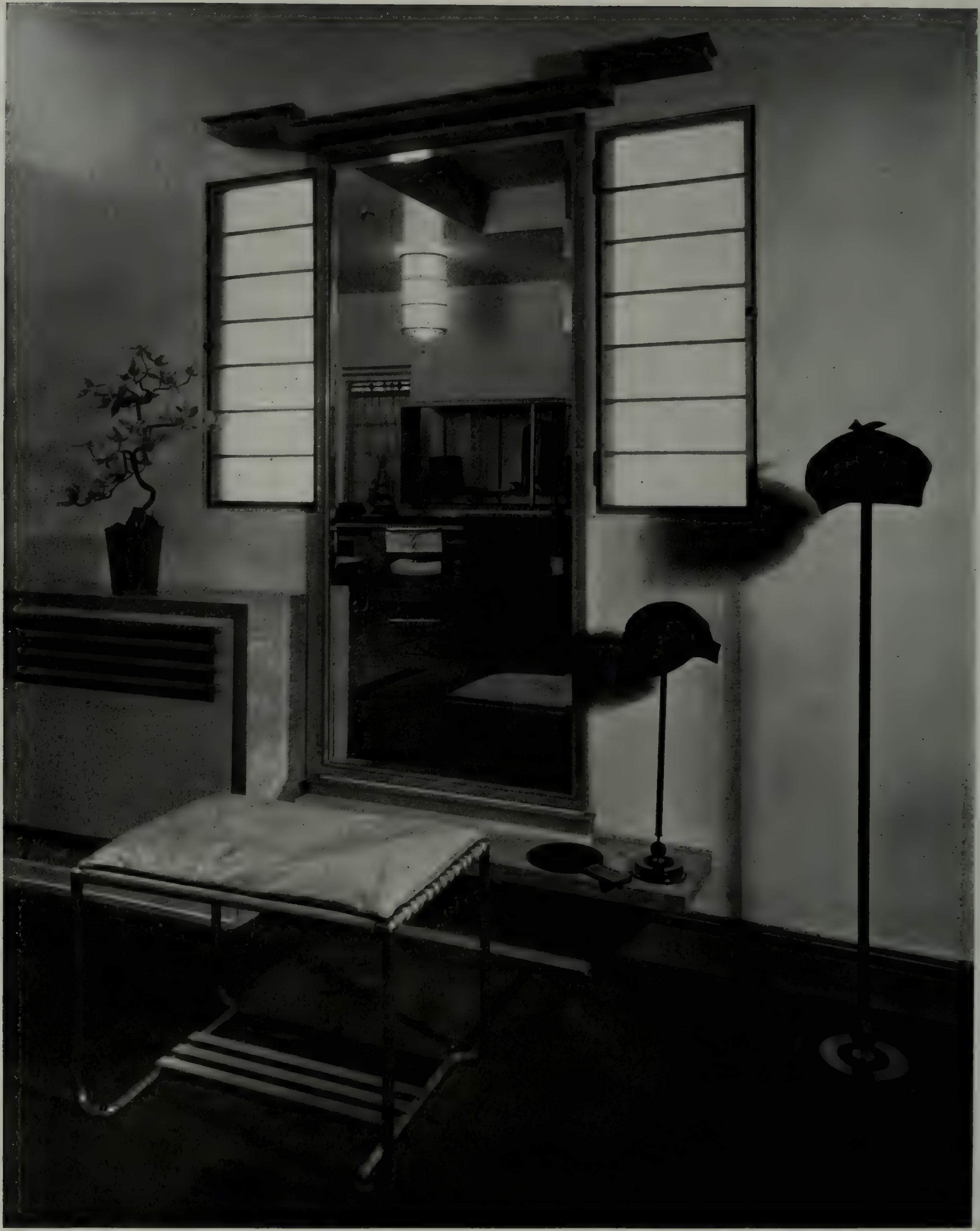
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

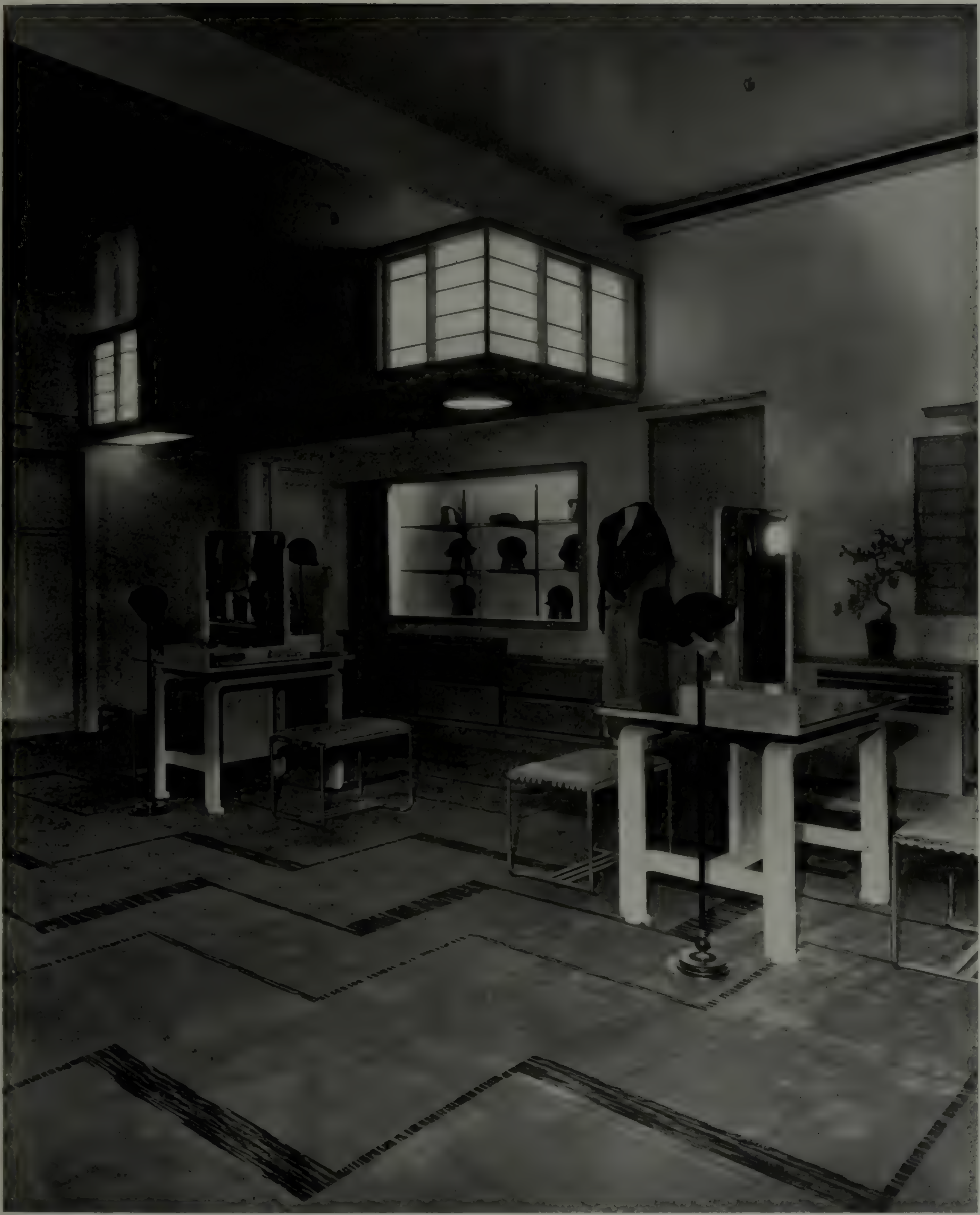
Sixth floor, custom dress salon and display niche. Applied ornamental strips of Benedict nickel. Recessed display case.



John Wallace Gillies, Inc.

L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

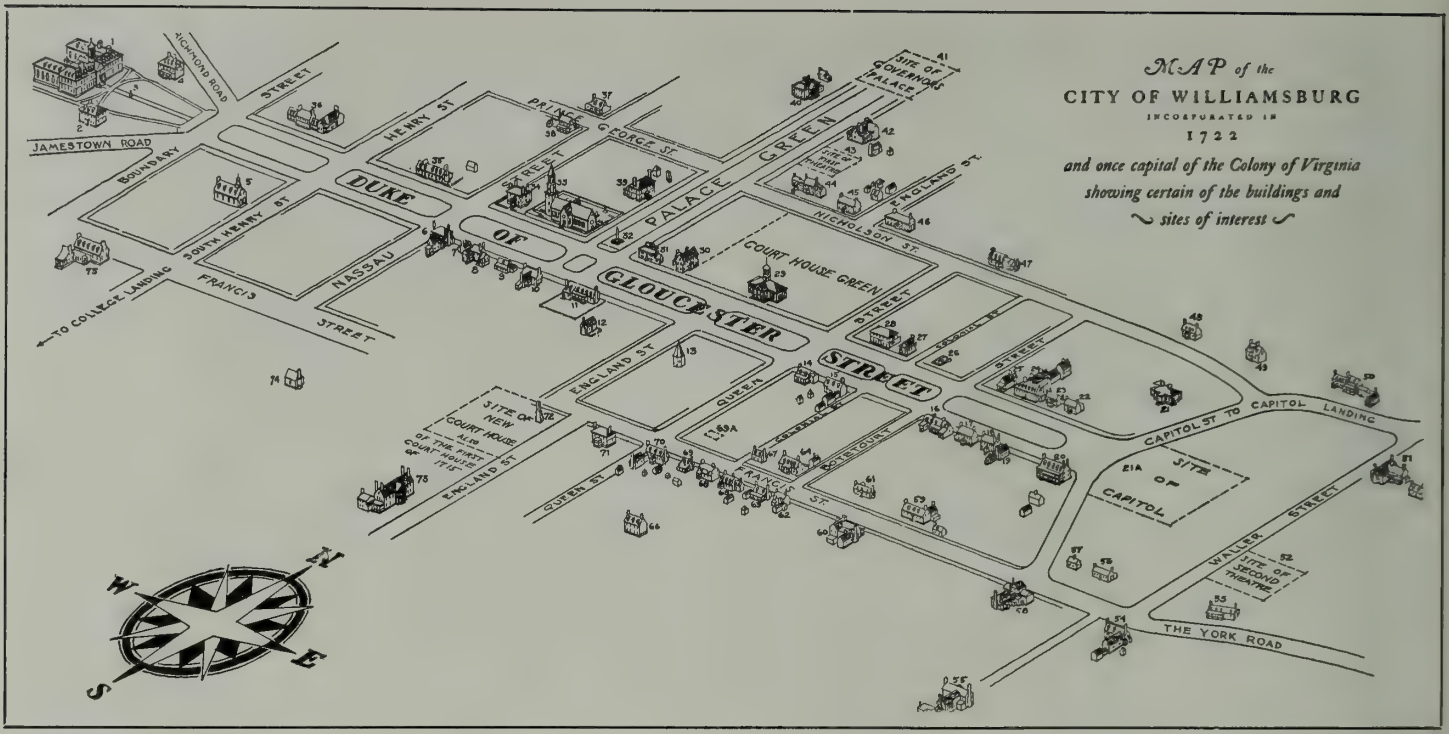
Seventh floor, "debonnaire" shop. Millinery try-on mirror with concealed sidelights.



John Wallace Gillies, Inc.

L. P. HOLLANDER COMPANY
3 EAST 57th STREET, NEW YORK CITY
DESIGNED BY JOCK D. PETERS
COLLABORATING WITH ELEANOR LEMAIRE

Seventh floor, "debonnaire" shop. Millinery display case in English oak with lacquer trim.



Permission of Williamsburg Holding Corporation

Drawn by Harold R. Shurtleff

THE EXCAVATIONS AT WILLIAMSBURG

The restoration of Williamsburg to its appearance in Colonial times, as to public buildings, residences, streets and gardens, is based on exhaustive research into documentary evidence both in this country and abroad and on extensive excavation and archaeological study of the site itself. The lapse of somewhat more than two centuries has brought about great changes in the aspect of the city, and during this time much of what actually exists in the way of records has been forgotten as well as what the earth may hold. Although for the most part the monuments are standing today, more or less altered in form, there are instances where only foundations remain, lying sometimes as deep as six feet below the modern grade. Preliminary to the restoration of any monument, all possible evidence of both a literary and pictorial character is gathered, the plaster is removed from the walls that may be standing and usually the whole site is laid bare by excavation. Minute examination of the existing walls and foundations determines which portions are original and reveals a wealth of information as to doors and windows, long ago filled in and lost beneath subsequent coats of plaster. Several distinct levels are often discerned which correspond to the periods of our history, and thorough excavation invariably brings to light many remains, such as unsuspected portions of the original building or subsidiary structures, all vestiges of which had disappeared. The documentary material and the evidence of the walls themselves, freed from the encumbering additions of later years, supplement and frequently verify each other, and with the remains uncovered by excavation lead to a full realization of the building as it once stood.

The archaeological work carried on in connection with the restoration may best be described in the specific instance of the "Wren" building of the College of William and Mary, where the results were most pertinent to a comprehensive understanding of that important monument. This was the first opportunity for any exhaustive archaeological study of the building, as it had been in almost continuous use since 1695; moreover, literary references of an architectural character are relatively few in number and barely outline its long and chequered history, while for certain periods they are non-existent. After the vines which practically covered the exterior walls had been cut away and the plaster on the walls of the interior had been entirely removed, there was brought to light a complicated variety of masonry representing a complete and unbroken archaeological history of the building from its foundation down to the present time. Upon close examination, the four periods of its building history were distinguished as well as certain minor operations that had taken place within these periods. The evidence confirmed the contemporaneous pictorial documents and explained several literary references that hitherto had not been quite clear. At certain points, the walls were laid

Editor's Note: The restoration of Williamsburg has been made possible through the generosity of Mr. John D. Rockefeller, Jr.; Perry, Shaw and Hepburn, Boston, are the architects; Todd and Brown, New York, are the contractors.

bare to their footings, and trenches were run to some distance in all directions to exhaust the possibility of evidence in the surrounding area.

The foundations of additions that had been made at various times were uncovered, as well as those of a portion of the first building which had apparently been buried since 1705. The latter remains represented a continuation of the north wing and gave the first indication that this wing had originally been longer; they were very well preserved and included a staircase which admitted to the basement of the north wing from the outside. In the south end of the building, the burnt wooden threshold of a doorway was found at some distance below the modern grade. The doorway was very important in the original building and is frequently mentioned in the literary references; after the fire of 1705 it was filled in and all evidence of it was lost. This threshold, indicating the original grade of the building, led to the establishing of the corresponding grade at the main entrance and to the subsequent solution of the difficult problem of the original entrance itself and its relation to the façade and to the plan of the building. The pavilion, at this point, though so carefully bonded into the wall that it appears to be contemporaneous with it, was found to be an addition resting in part on what would seem to have been supports for the original staircase. As a result of these discoveries, the only picture known of the first building, one that has long been held suspect by some scholars, was proved to be essentially correct. Four subsidiary structures mentioned in the literary references were found in the surrounding area, while at the rear between the wings an interesting discovery was that of the actual kilns in which the bricks for the building had been burned, verifying the statement in the building accounts that "the bricks were made on the spot."

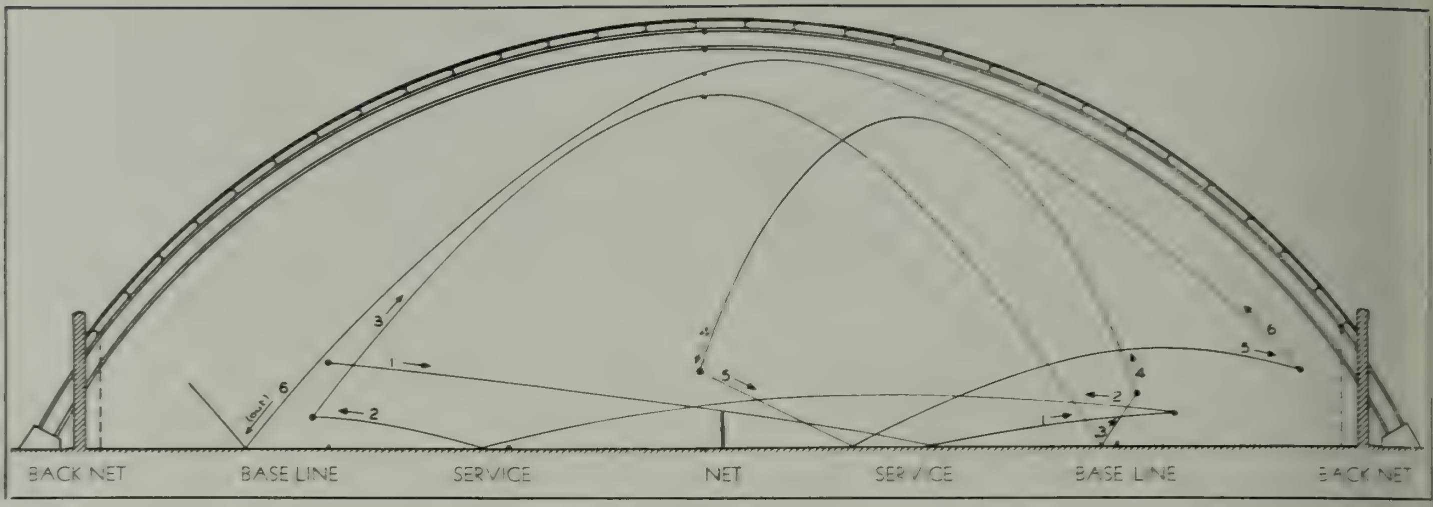
The original or first building was considerably damaged by fire shortly after its erection and the second building received certain architectural additions, in particular the chapel or south wing, which corresponded to the wing on the north. In this form the building passed the greater part of its history and it is to this form that it is being restored, the internal evidence of the structure itself along with the information derived from excavation and research leaving no doubt as to an accurate restoration. The additions that represent the third and fourth periods, slight but nevertheless conspicuous enough to change the appearance of the building, have been removed. Before any demolition was begun, the building was photographed throughout, and as the work progressed, a complete photographic record of all evidence was maintained, including that revealed by excavation; likewise, a complete set of archaeological drawings was made showing the four periods and incorporating as well the remains that had been excavated. Every effort has been put forth to prevent the loss of evidence, whatever its period, while in the restored building a construction calculated to protect the original walls and to relieve them of all weight assures their preservation.

PRENTICE DUELL

Layton's Studio. Permission of Williamsburg Holding Corporation

THE WREN BUILDING
EXCAVATED AREAS

LEFT: AT FRONT OF BUILDING
ABOVE: AT REAR



CROSS-SECTION, TRAJECTORY TYPE OF INDOOR TENNIS COURTS BUILDING

Diagram shows how roof lines inclose space required normally in play. The flights of the ball during a rally with unusually high lobs and bounds are shown: 1. Serve; 2. Low return to mid-court; 3. Lob to back court; 4. Weak return, short to forecourt; 5. Smash to mid-court; 6. Attempted return, out beyond base line.

TRAJECTORY TENNIS COURT BUILDINGS

GAVIN HADDEN, CIVIL ENGINEER

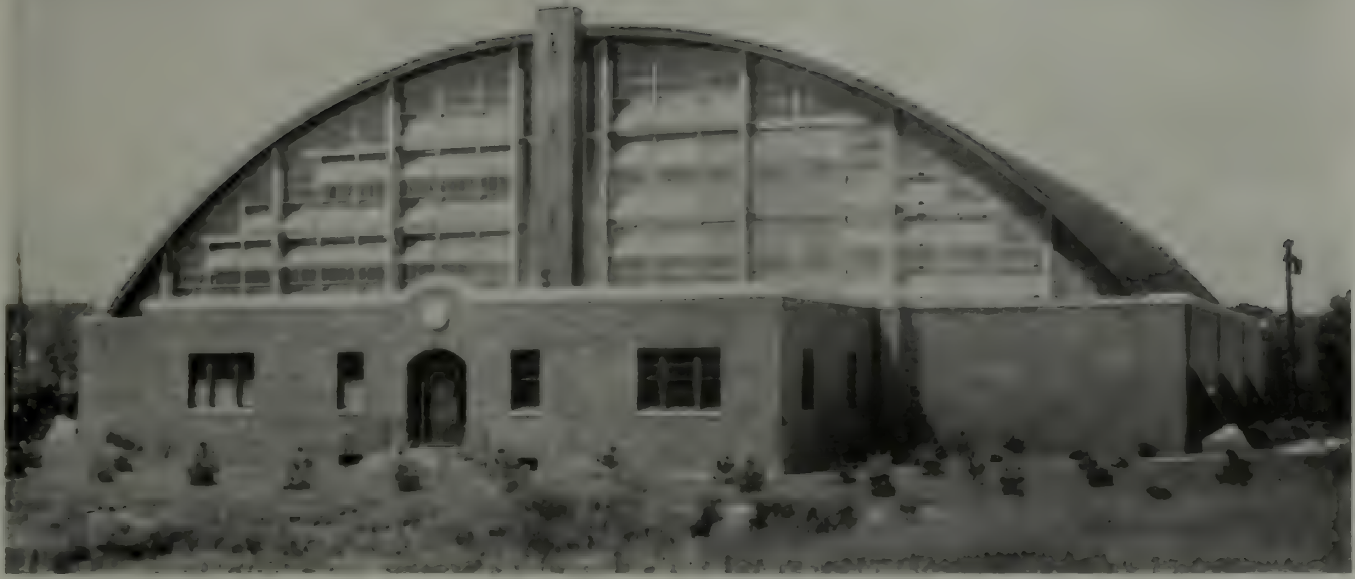
The most notable departure from orthodox ideas of design is the arching of the roof of the building lengthwise rather than transversely. Two major advantages are apparent at once: first, the possibility of constructing the side walls almost entirely of glass; and second, a maximum ceiling height at the center of the court, with a minimum at the ends and an equal ceiling height entirely across the court at any given point.

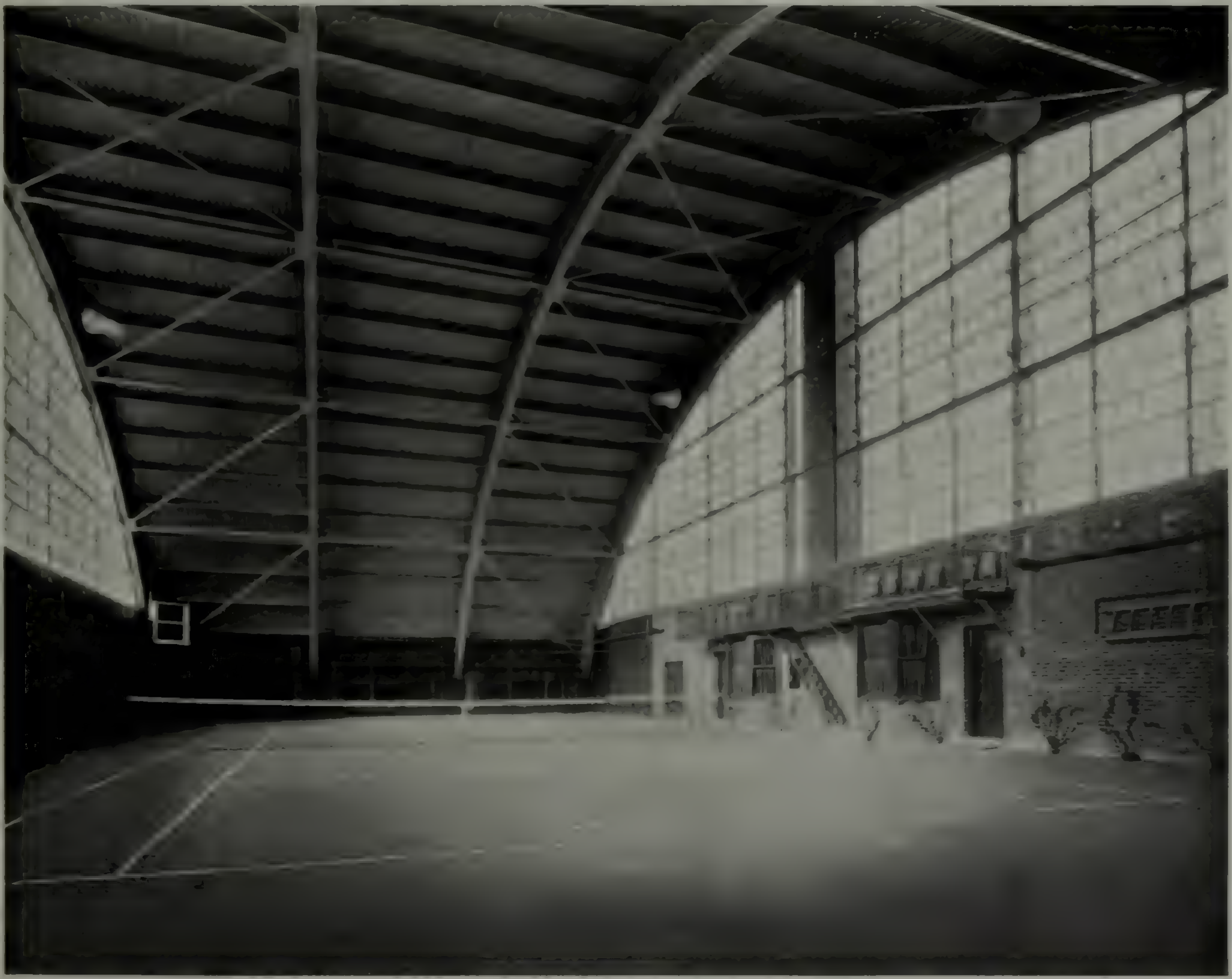
The sides of the building are enclosed with figured glass, and the playing area lighted entirely by natural light. There is no glare. In addition, the absence of skylights eliminates the confusing light and dark patches found in earlier tennis court buildings.

The adaptability of the longitudinal arching to the requirements of the game will be seen readily by a study of the longitudinal section. It should be noted that it was the game itself which really determined the shape of the building.

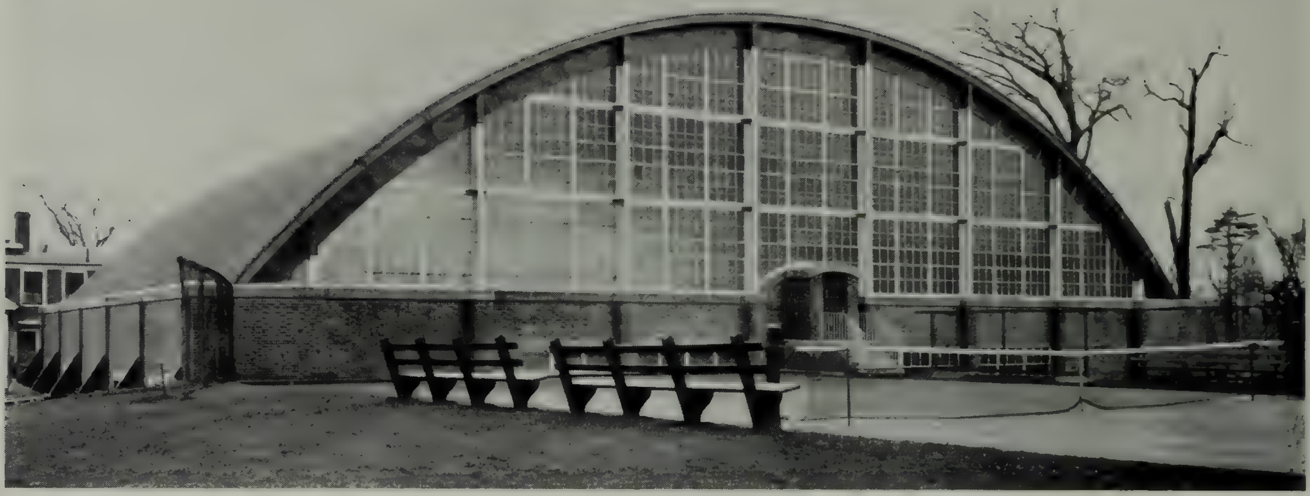
Other advantages and innovations are found in these tennis buildings. Among these is the application of aluminum paint to the upper part of the ceiling to give a background simulating outdoor conditions. At the ends of the courts green is used for a similar purpose. Artificial lighting, using almost any system, is usually installed for night play. This can be started with a minimum of lighting, costing little to operate, and increased in amount if desired, provision easily being made for future addition. Louvres at each end of the building allow air but no light to enter. The purlin channels are reversed so that they will not become ball traps.

Three buildings of this type have been built. Of interest is the fact that each court was built for a different type of client: the first, at Brookline, Mass., for a large country club; the second, at Beverly, Mass., for a small group of suburban residents; and the third, at Holmdel, N. J., for a single individual. The first encloses two courts, the others one court. The Brookline and Beverly courts are similar in that both have a clay playing surface which is at the general level of the surrounding ground. The Prentice court at Holmdel is sunk 8 feet below the average level of the ground outside and has for its playing surface a special type of floor with a cork carpet, laid so as to give uniformity and the correct amount of resiliency. All the buildings have cantilevered balconies for the convenience of a small number of spectators. The court at Brookline has two, one at each side, with umpire chairs suspended from the balconies on the center line of the courts. Dressing facilities for the Brookline court are provided in a separate building; for the other courts additions to the main building were constructed to house these and other facilities. The Beverly court, for instance, in addition to locker and shower rooms for men and women, has a club room of comfortable size with a large open fireplace, a separate telephone room and a kitchenette.

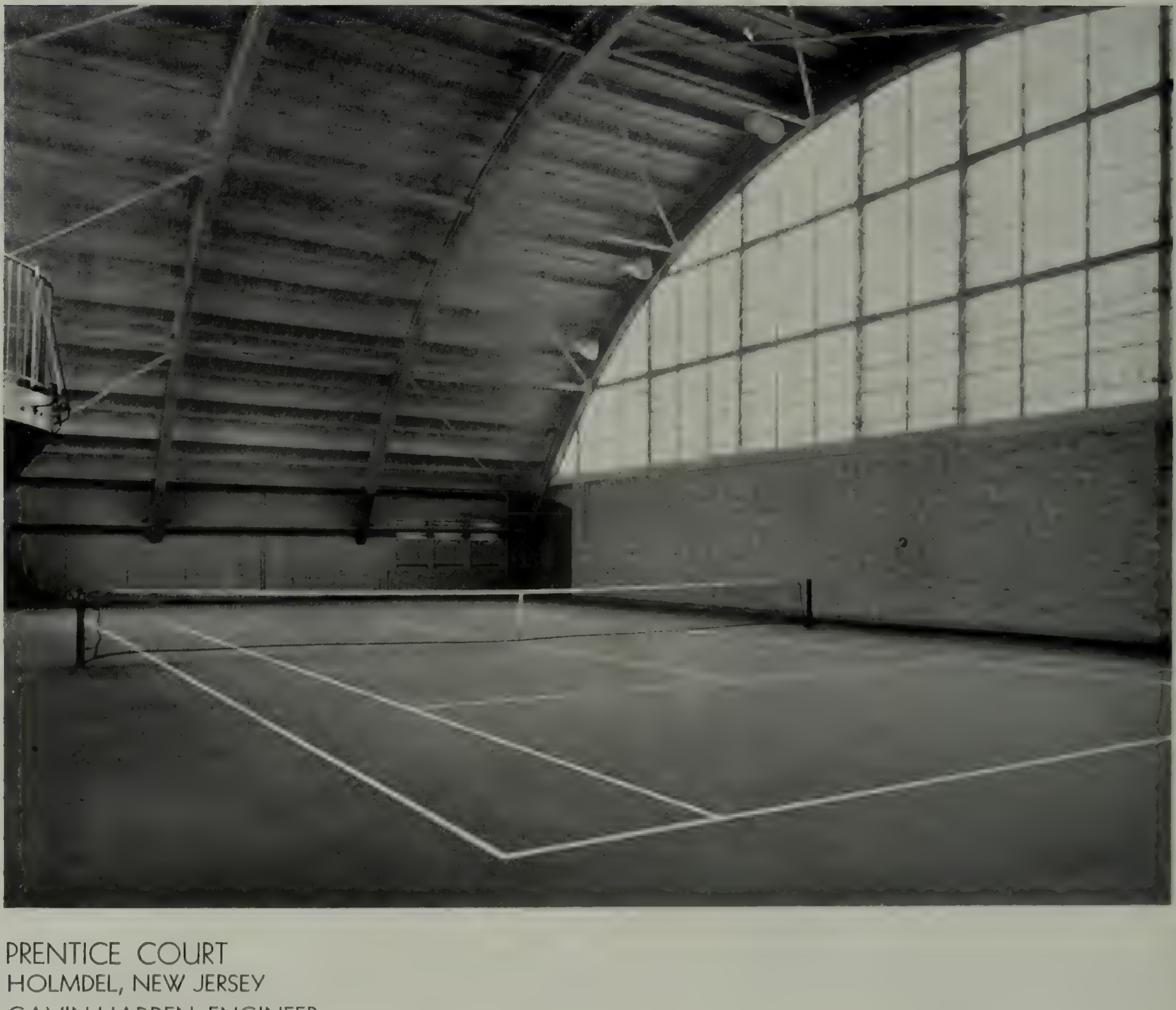




TRAJECTORY TENNIS COURT BUILDING
BEVERLY, MASSACHUSETTS
GAVIN HADDEN, ENGINEER

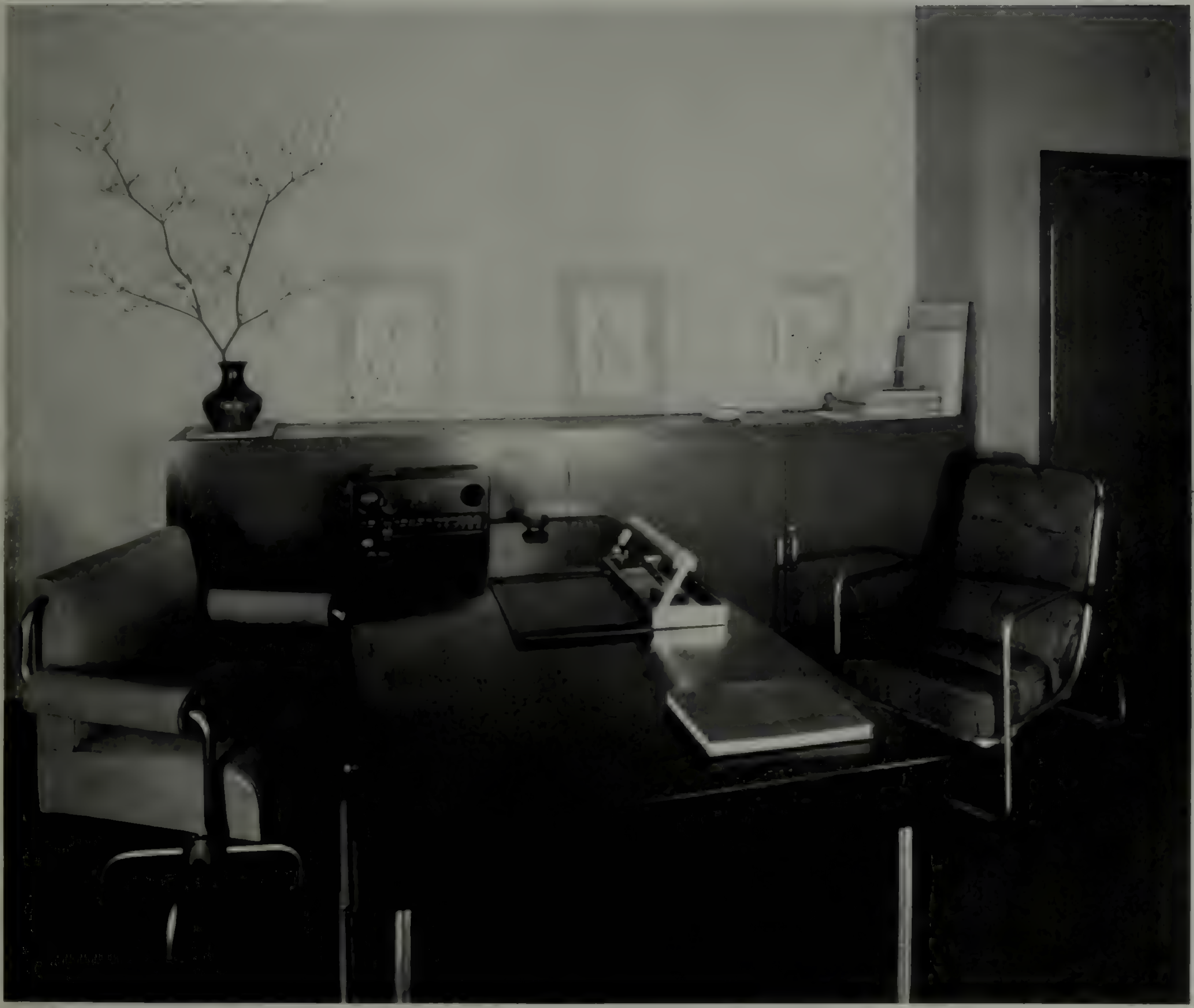


BROOKLINE, MASSACHUSETTS



PRENTICE COURT
HOLMDEL, NEW JERSEY
GAVIN HADDEN, ENGINEER

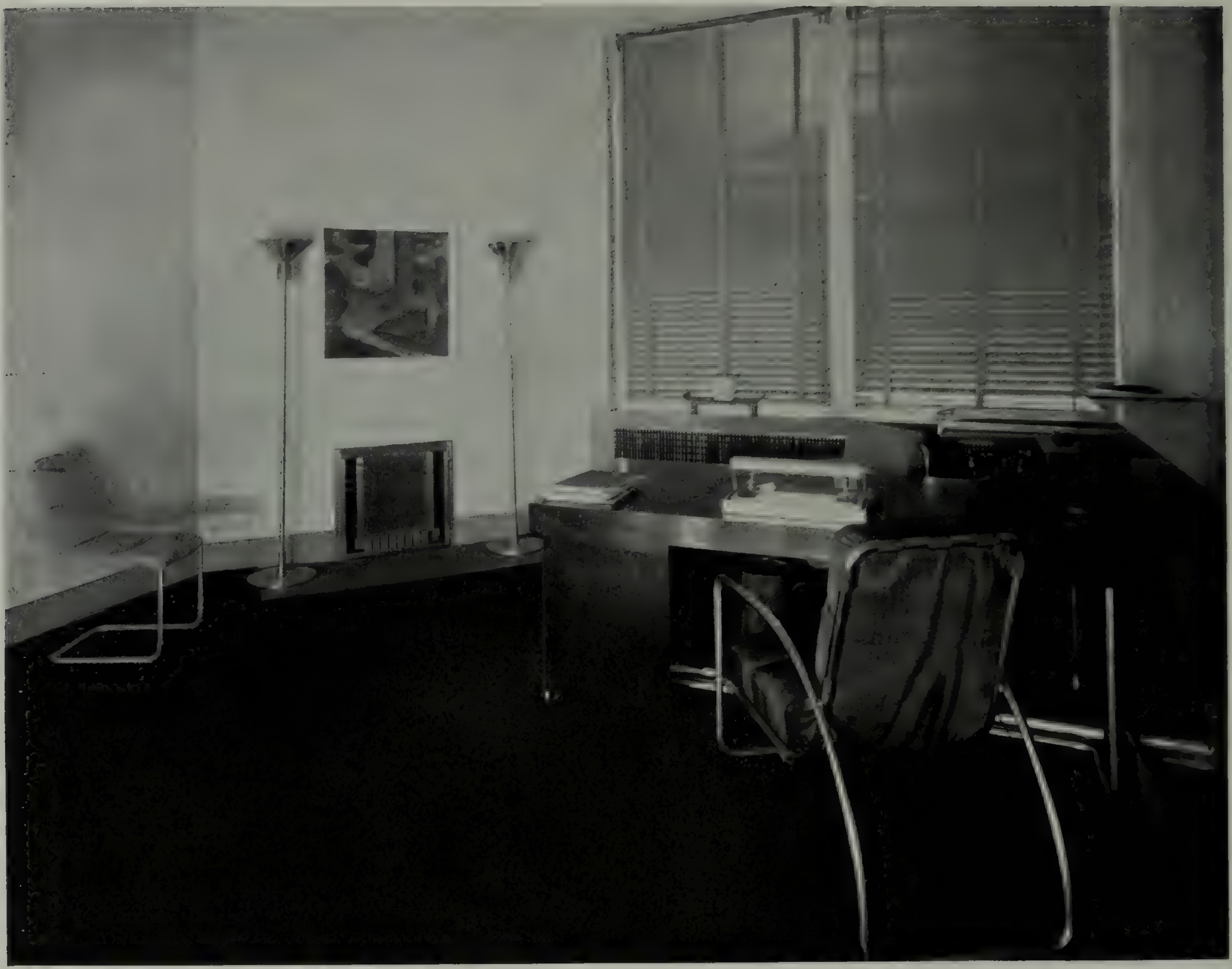
PORTFOLIO OF OFFICE INTERIORS



Charles Latere

ADVERTISING OFFICES OF LENNEN AND MITCHELL
PRIVATE OFFICE OF JOHN DE VRIES
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

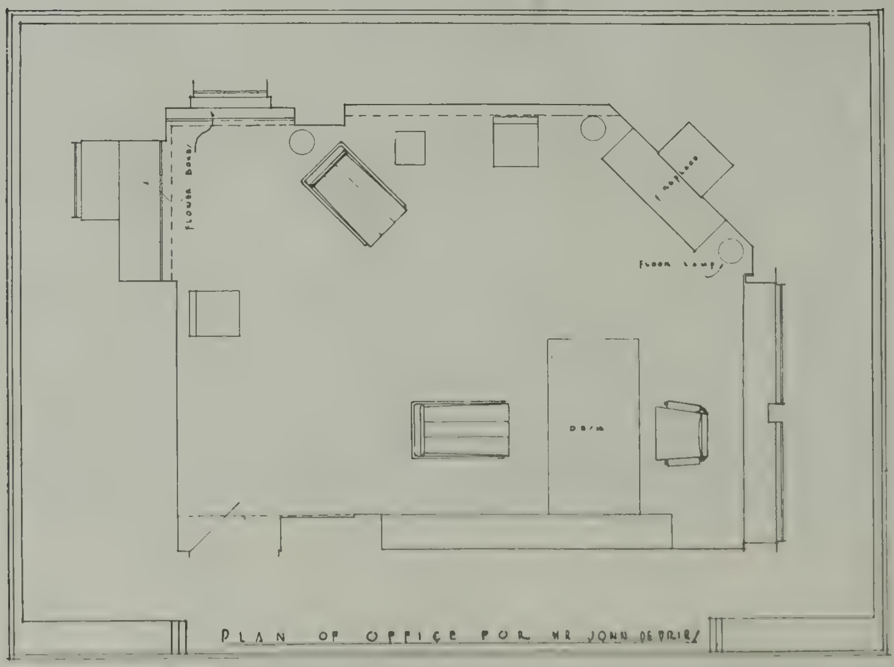
Walls in plaster, painted pale yellow. Ceiling white. Covers in tan and dark brown. Floor carpeted in black. Desk in black bakelite. All metal work of high polish nickel.

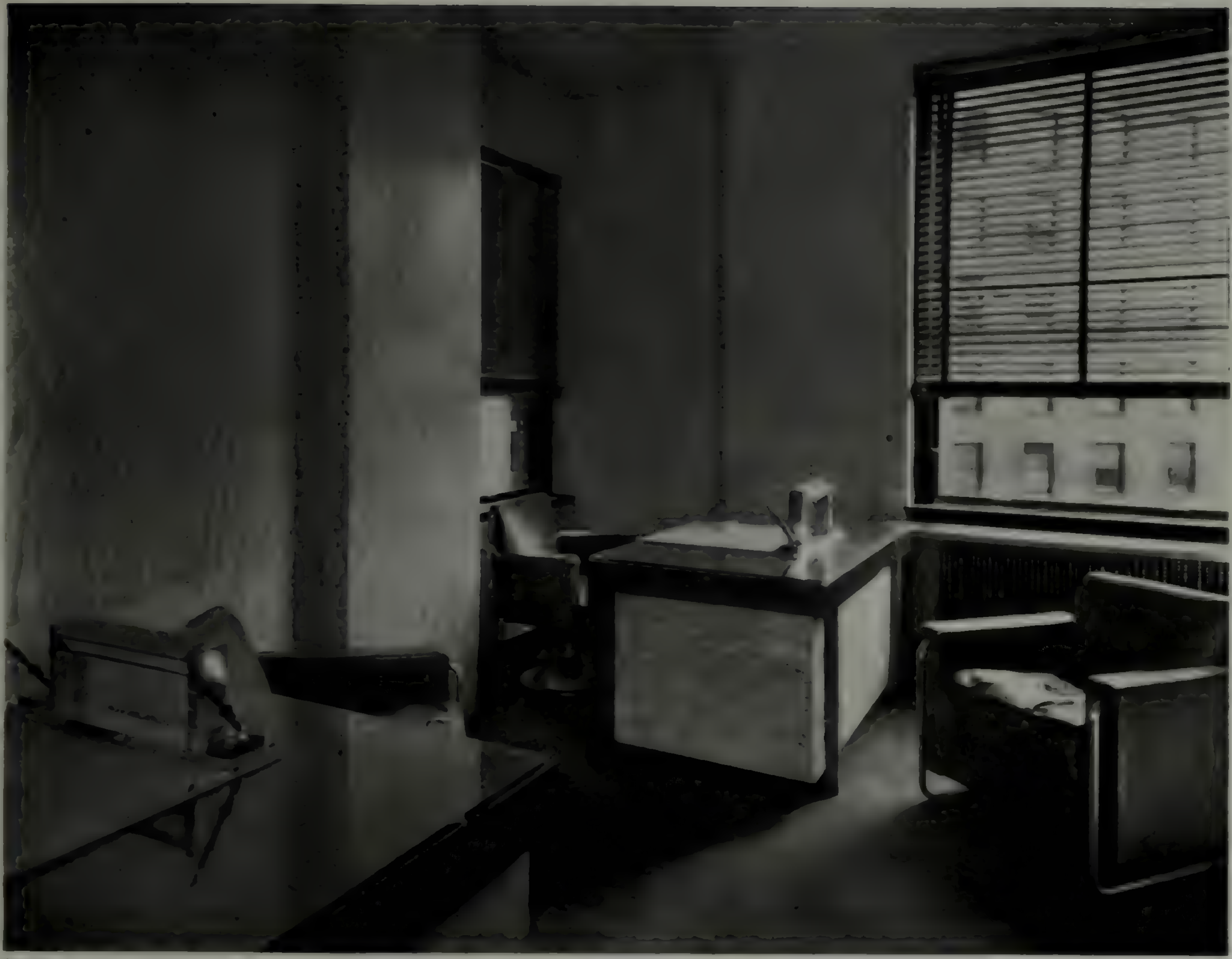


Charles Latere

ADVERTISING OFFICES OF LENNEN AND MITCHELL
PRIVATE OFFICE OF JOHN DE VRIES
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

Chairs upholstered in tan and brown. Flower box under windows in high polish nickel plate and brilliant red.

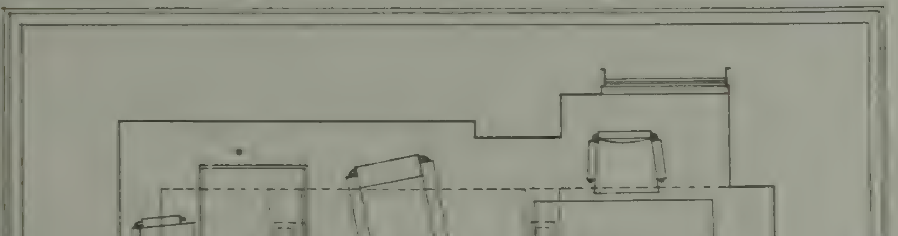




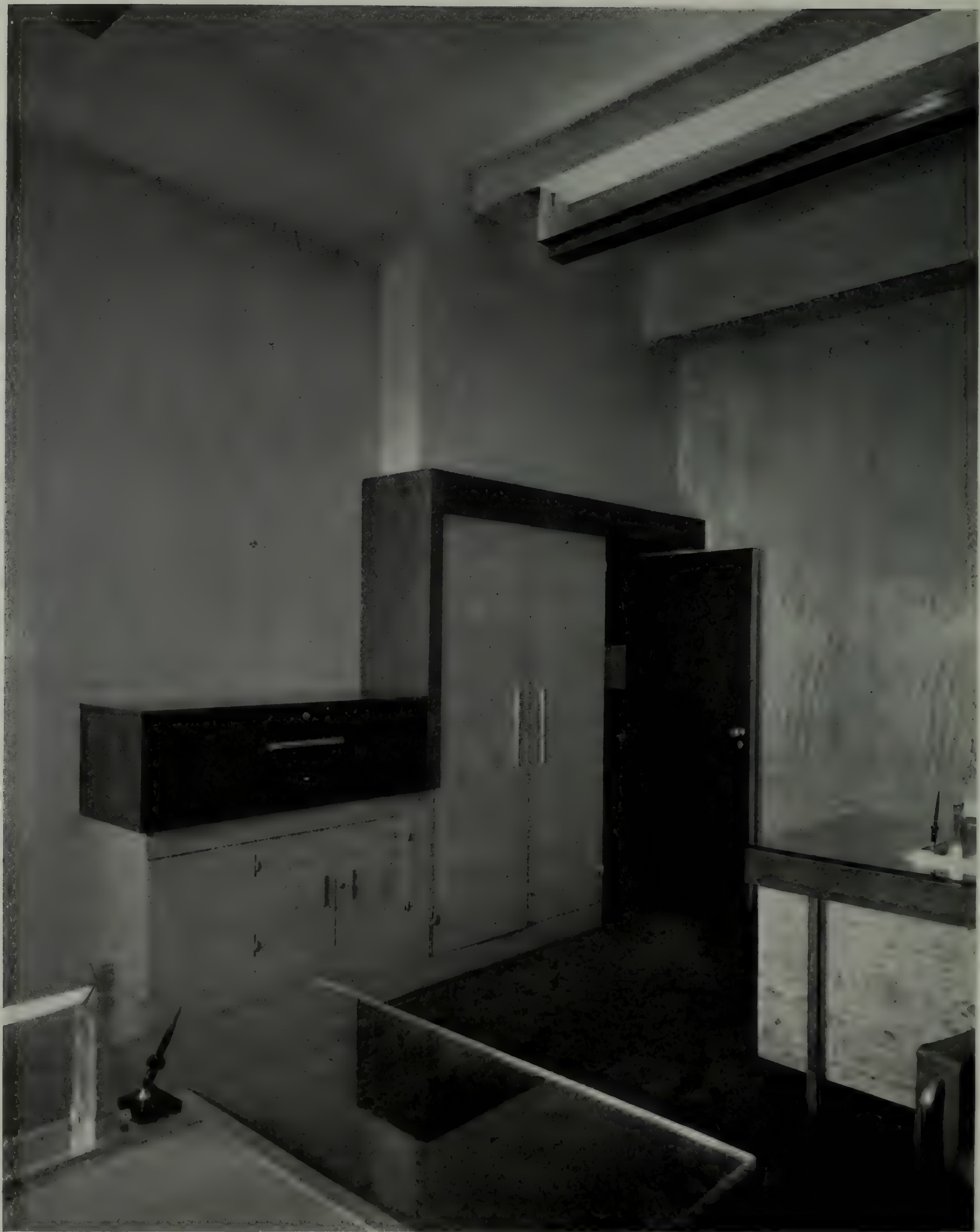
Dorsesen

BROKERAGE OFFICES OF STRAUS AND COMPANY
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

Floors carpeted in brilliant green. Furniture upholstered in leather, same color as carpet.



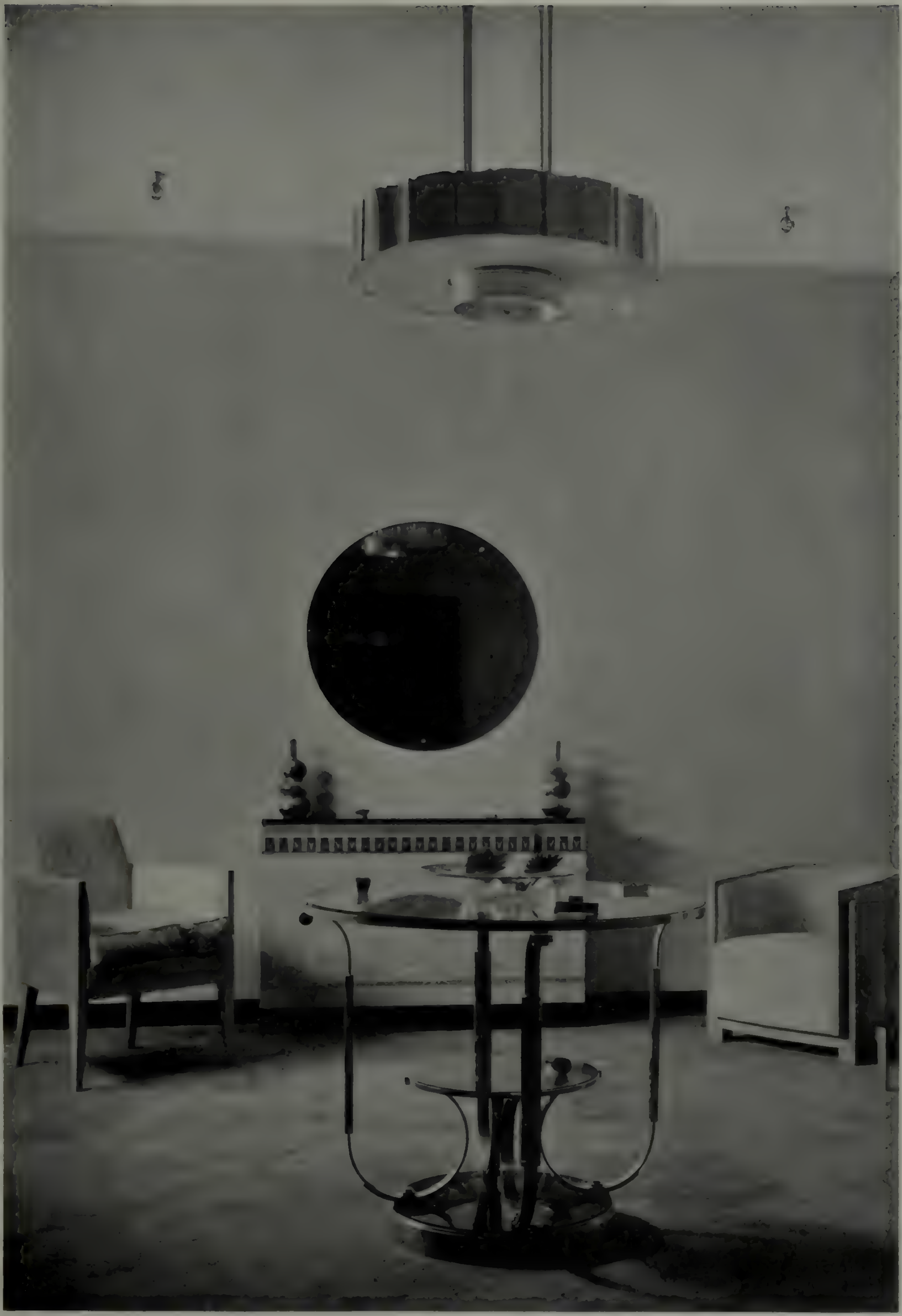
PLAN OF OFFICE FOR MR. JACK STRAUS



Danielson

BROKERAGE OFFICES OF STRAUS AND COMPANY
NEW YORK CITY
PERCIVAL GOODMAN, INC., ARCHITECTS

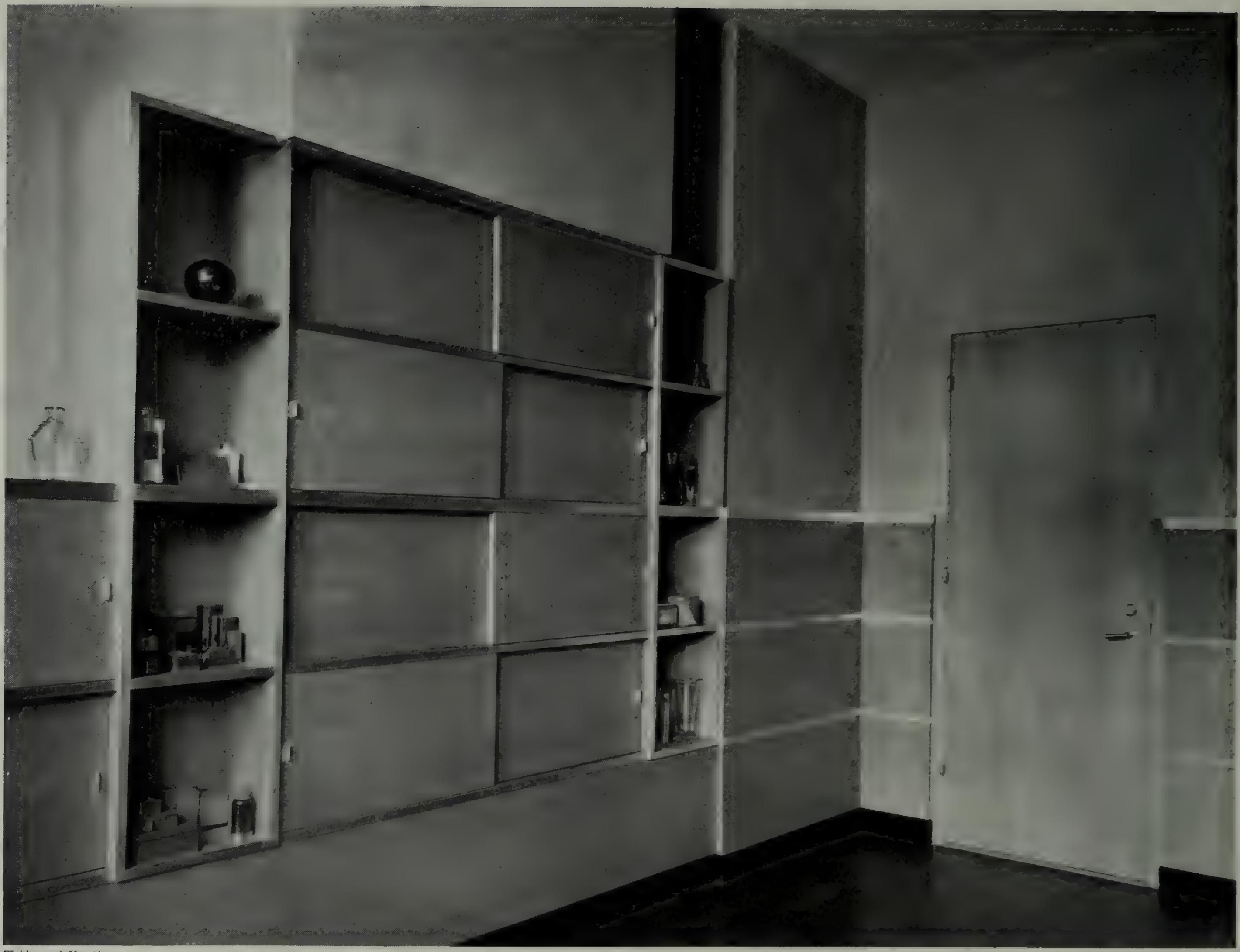
Walls paneled in Avoidire (light yellow). Built-in cupboards in redwood burl (dark brown red). Furniture same wood as walls. Metal work of dull nickel plate; fixtures same as metal.



Tebbs and Knell

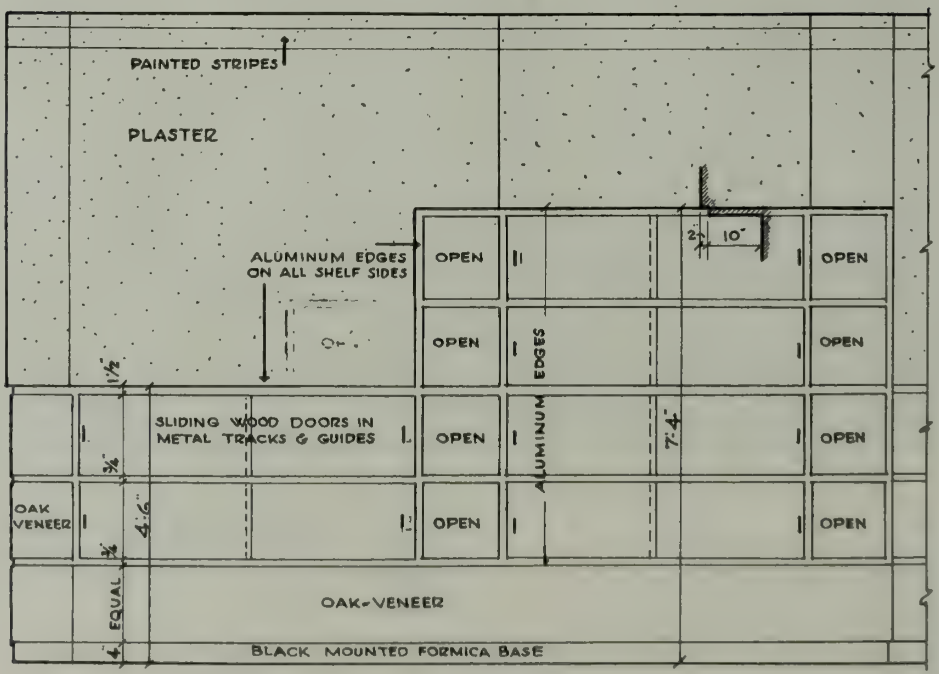
PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

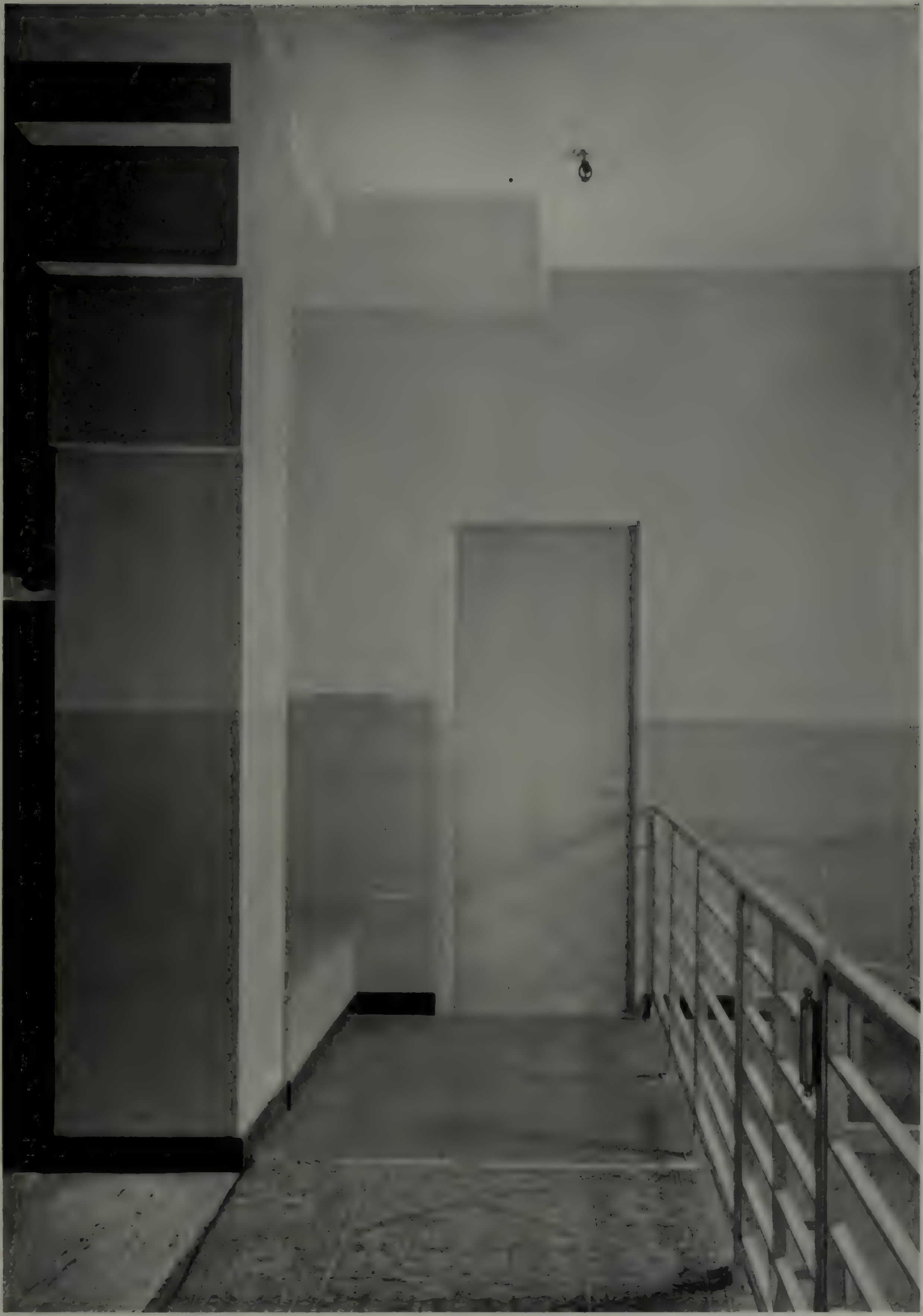
Reception room. Walls green with silver edging. Ceiling cream. Carpet two tones of gray-green.


Tebbs and Knell

PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

Cabinets and wainscoting in natural oak and aluminum. Flush panel door of oak. Green battleship linoleum floor.

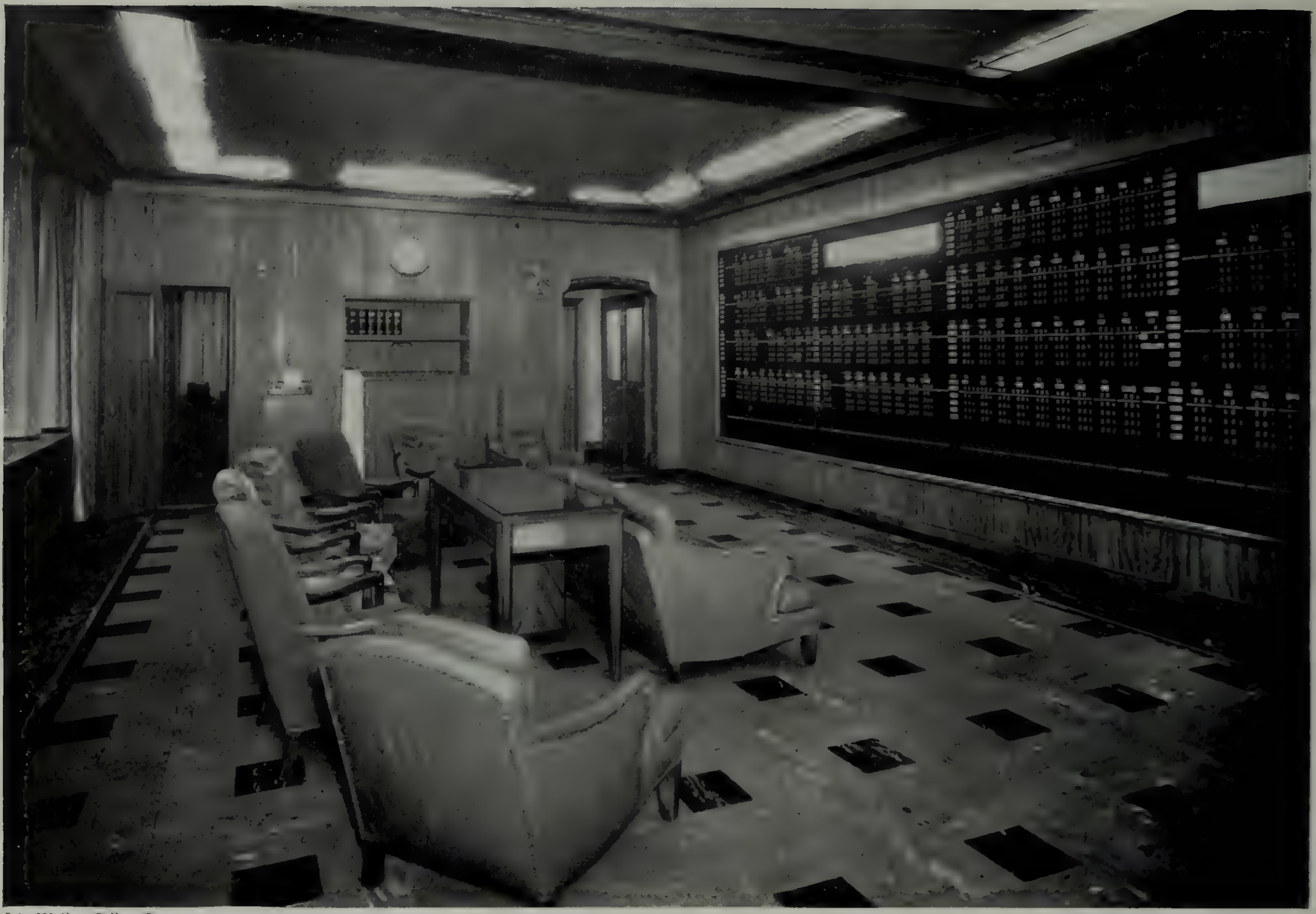




Tebbs and Knell

PERFUME SHOP OF BOURJOIS, INC.
NEW YORK CITY
THOMPSON AND CHURCHILL, ARCHITECTS

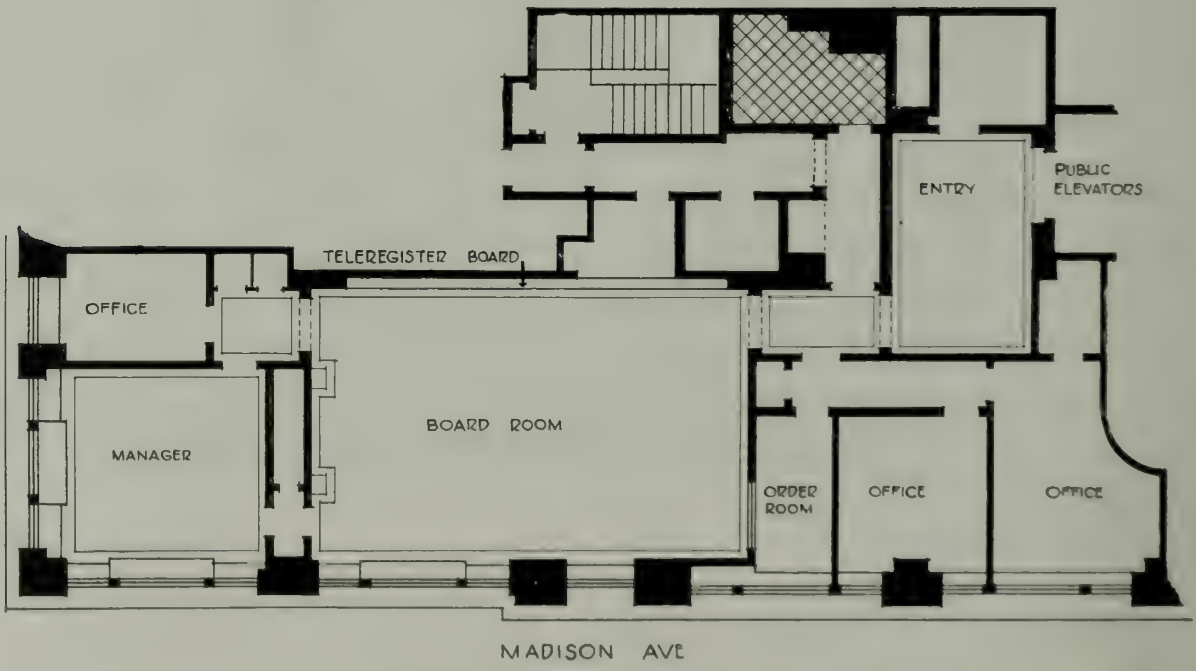
Rail of chromium and aluminum.

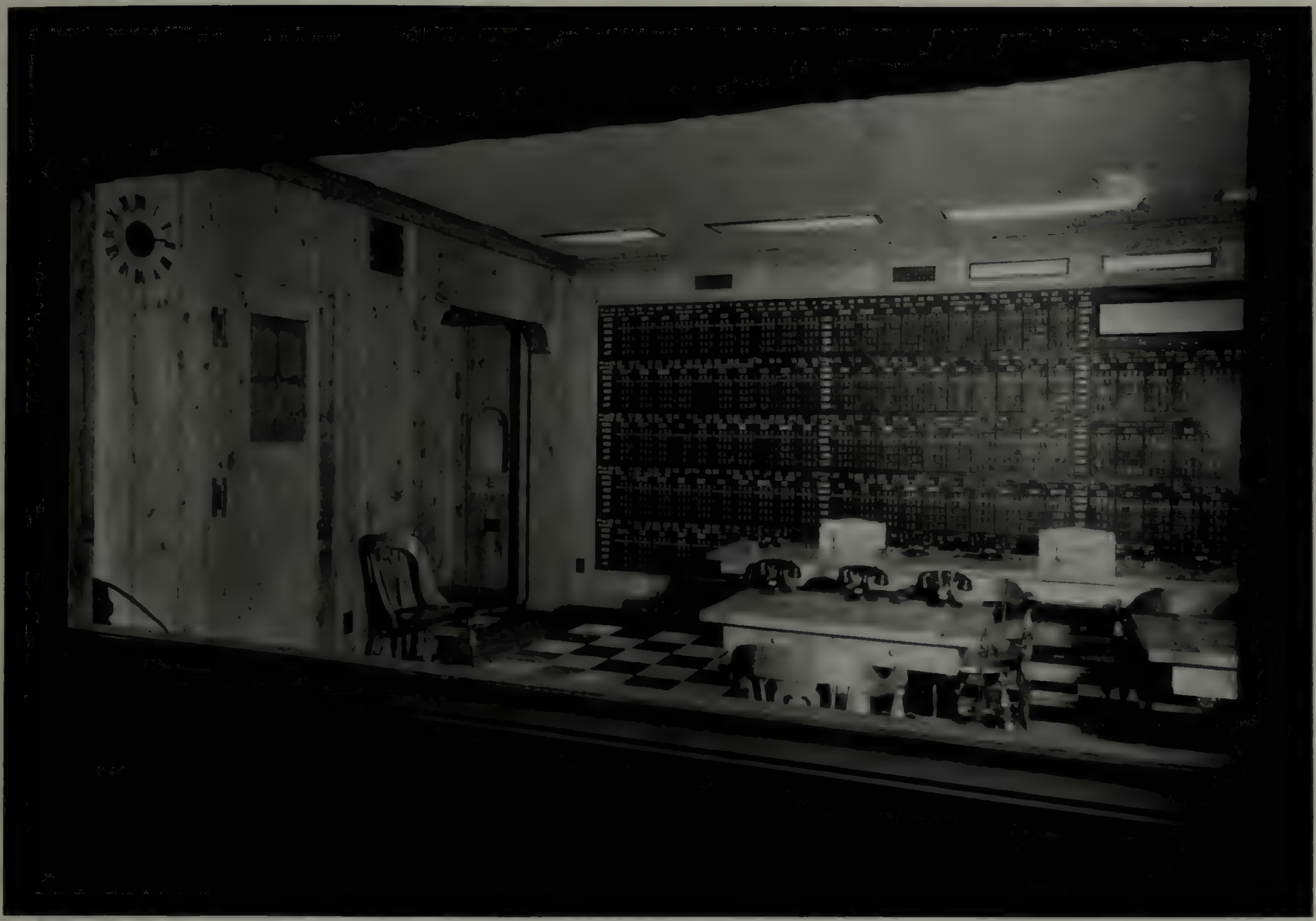


John Wallace Gillies, Inc.

GRUNTAL, LILIENTHAL AND COMPANY
NEW YORK CITY
EDWARD I. SHIRE, ARCHITECT

Board room of brokerage office.





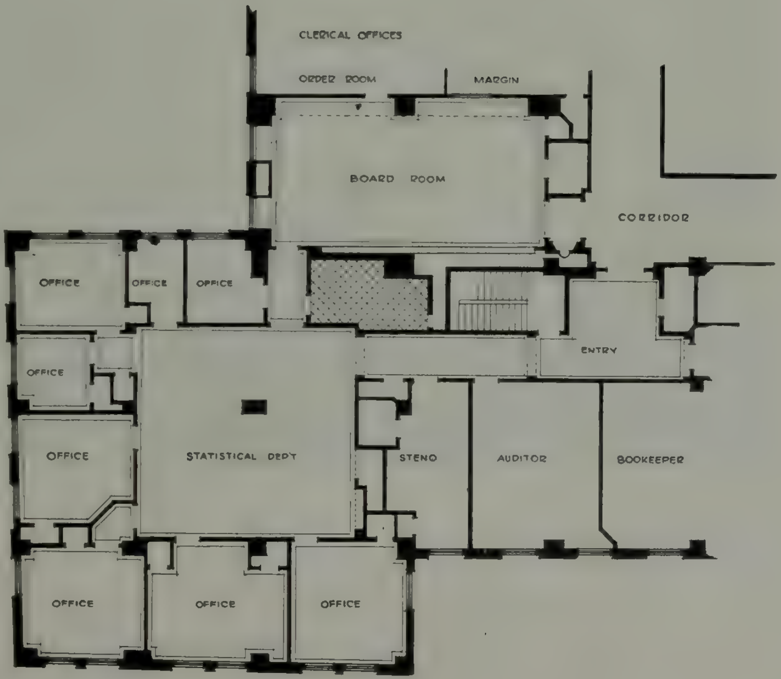
John Wallace Gillies, Inc.

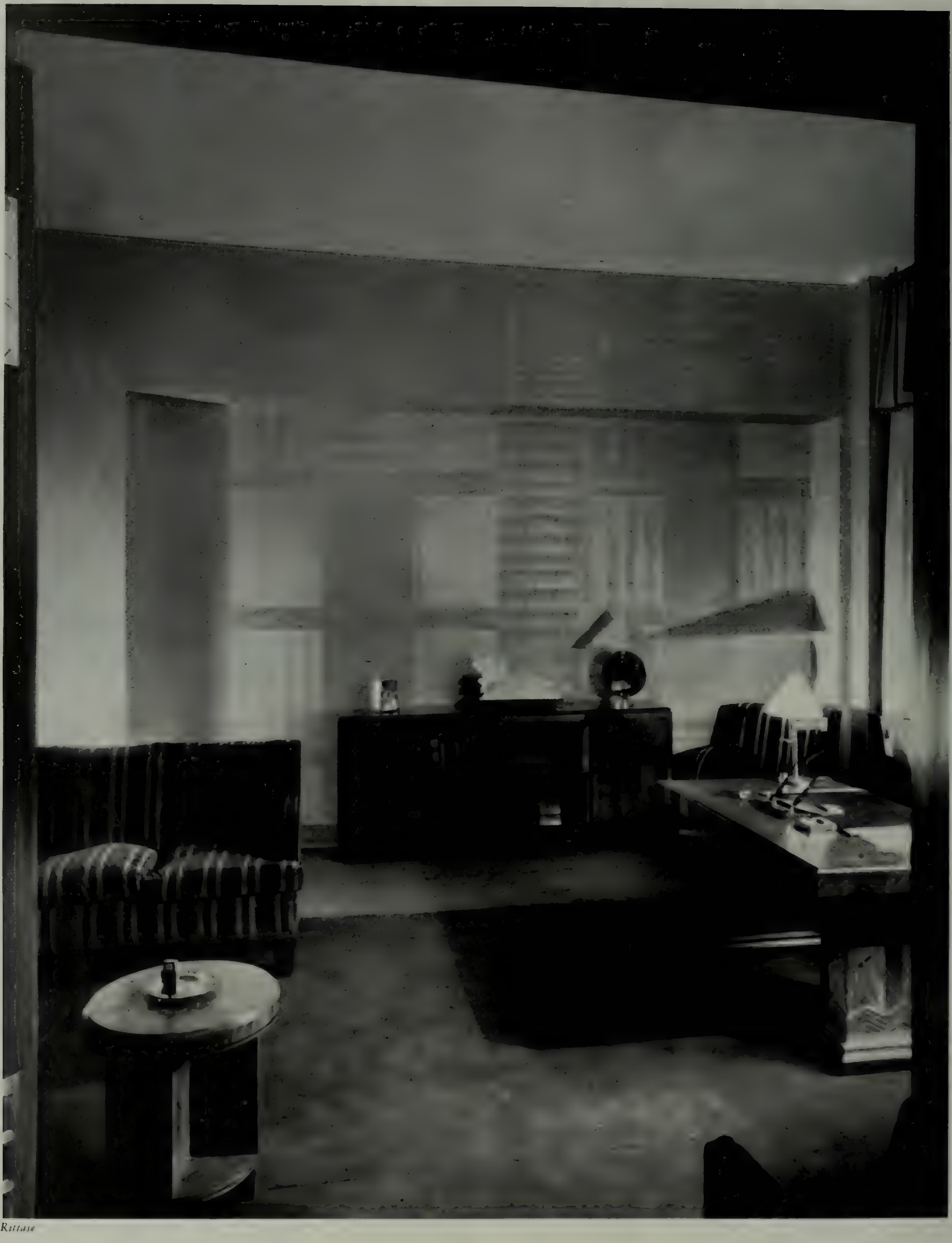
NEWBURGER, HENDERSON AND LOEB

NEW YORK CITY

EDWARD I. SHIRE, ARCHITECT

Board room of brokerage office as seen from margin room.

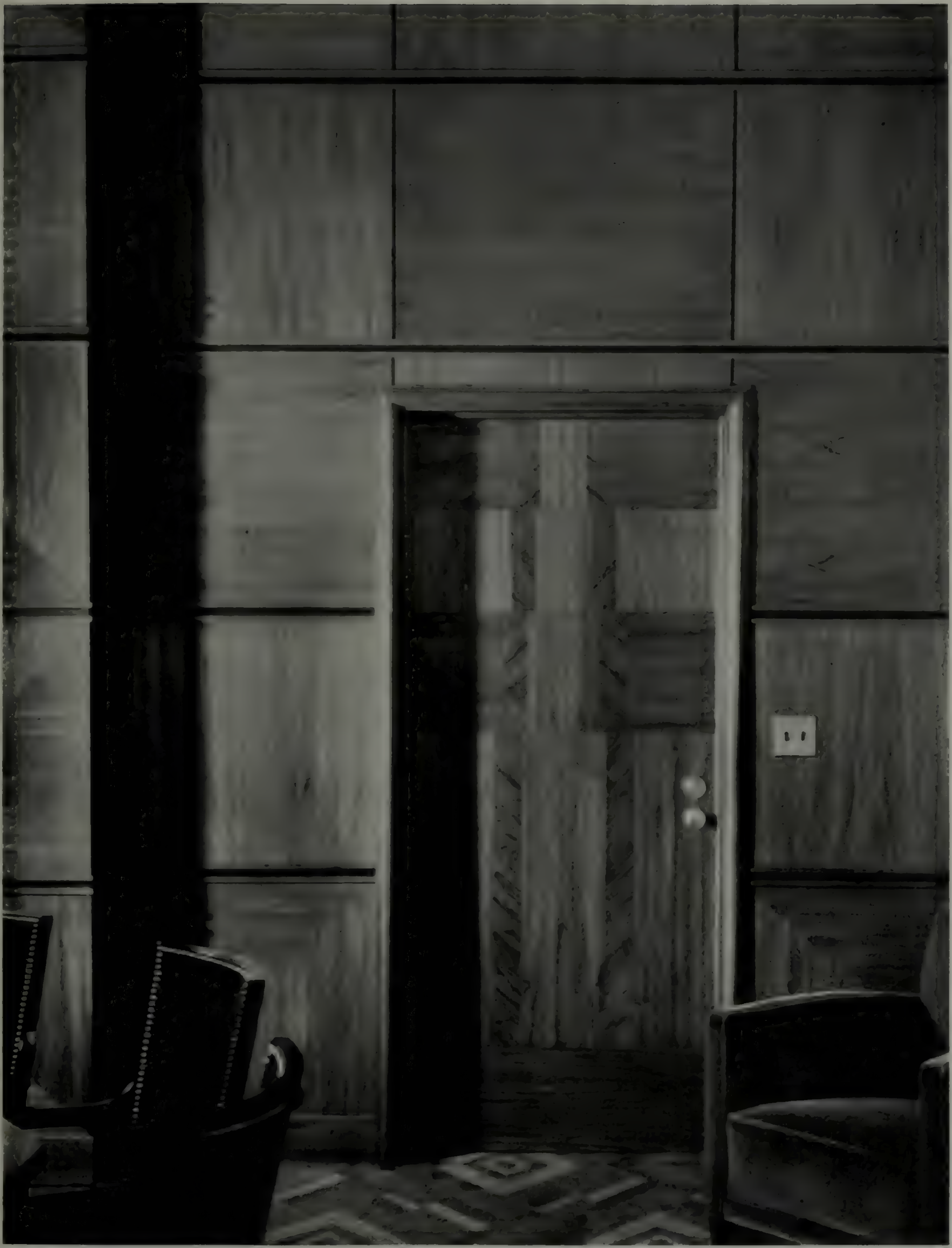




Rittase

INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

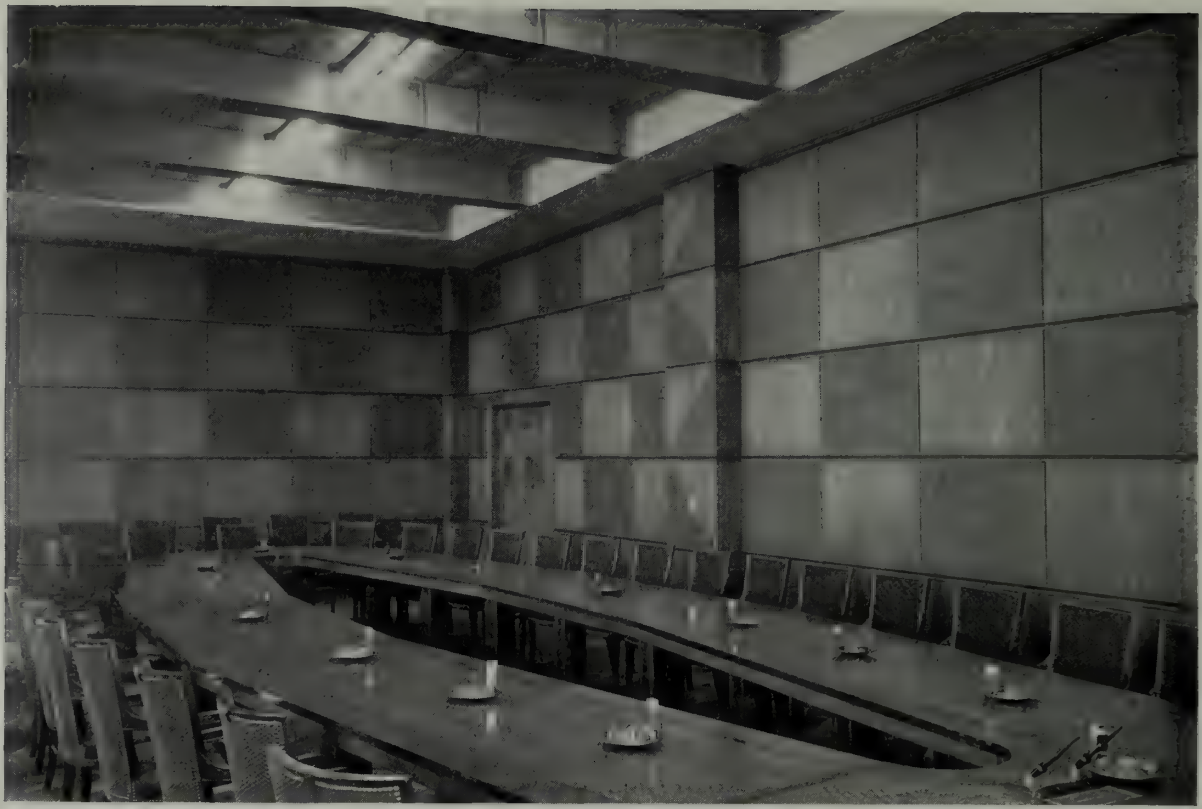
President's office.



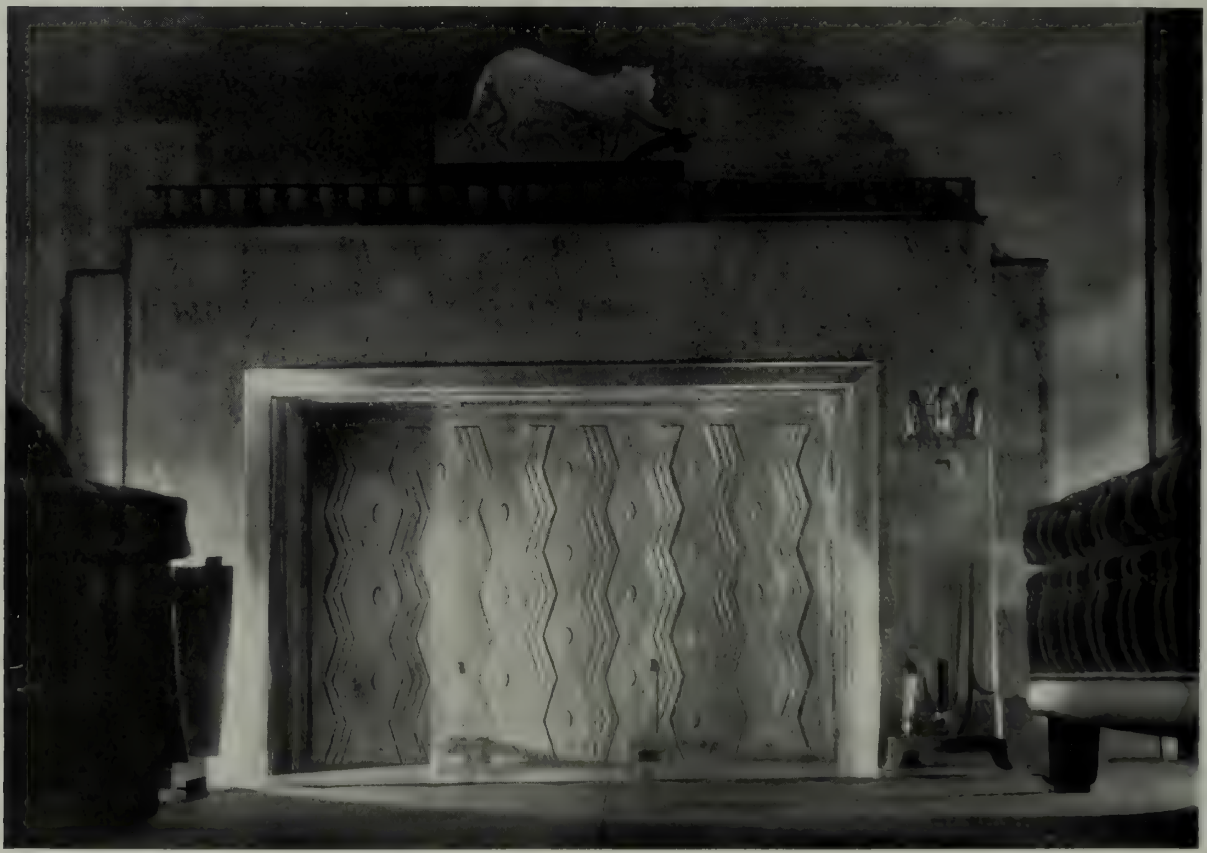
Rittase

INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

Board of directors' room.



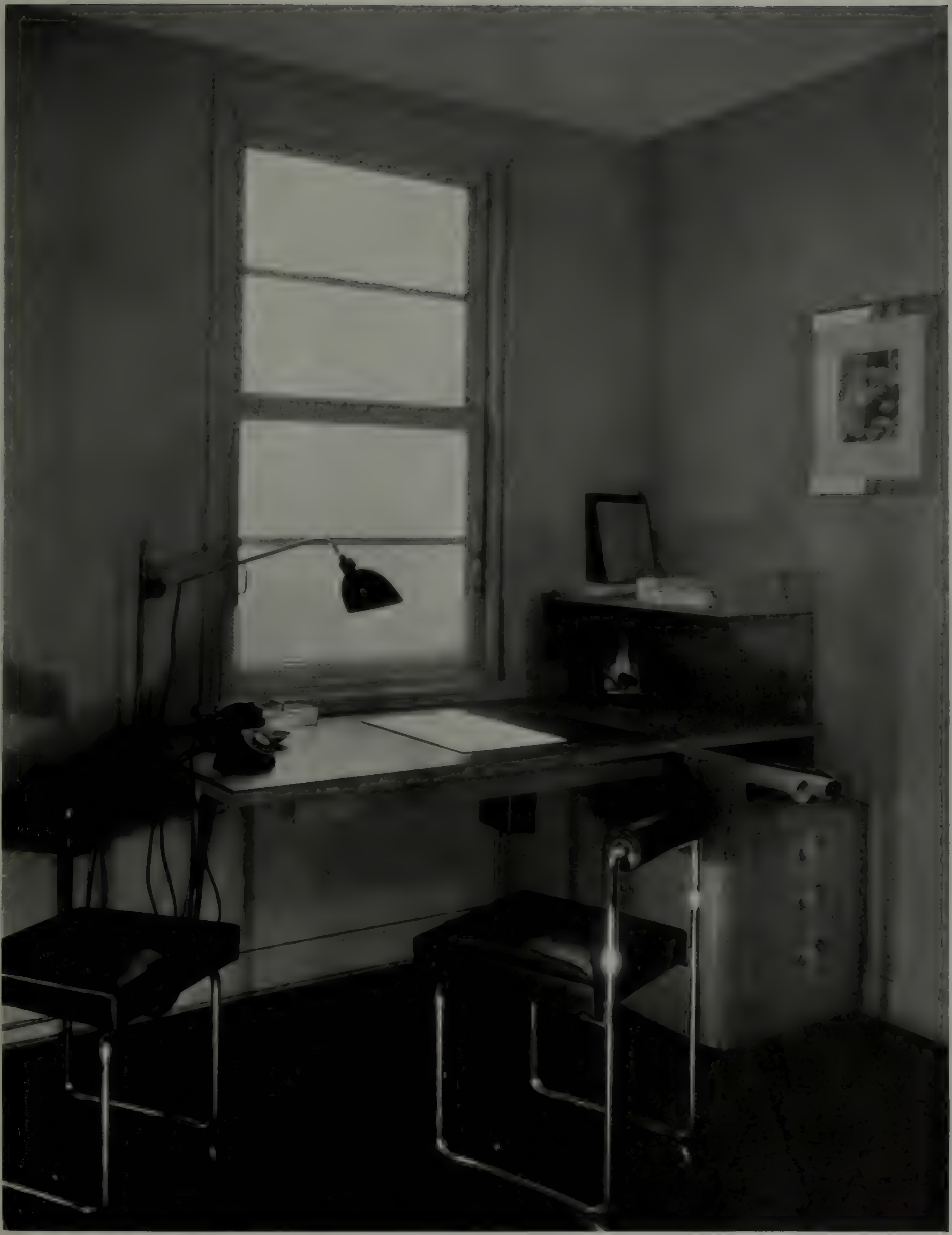
Board of directors' room.



Rittase

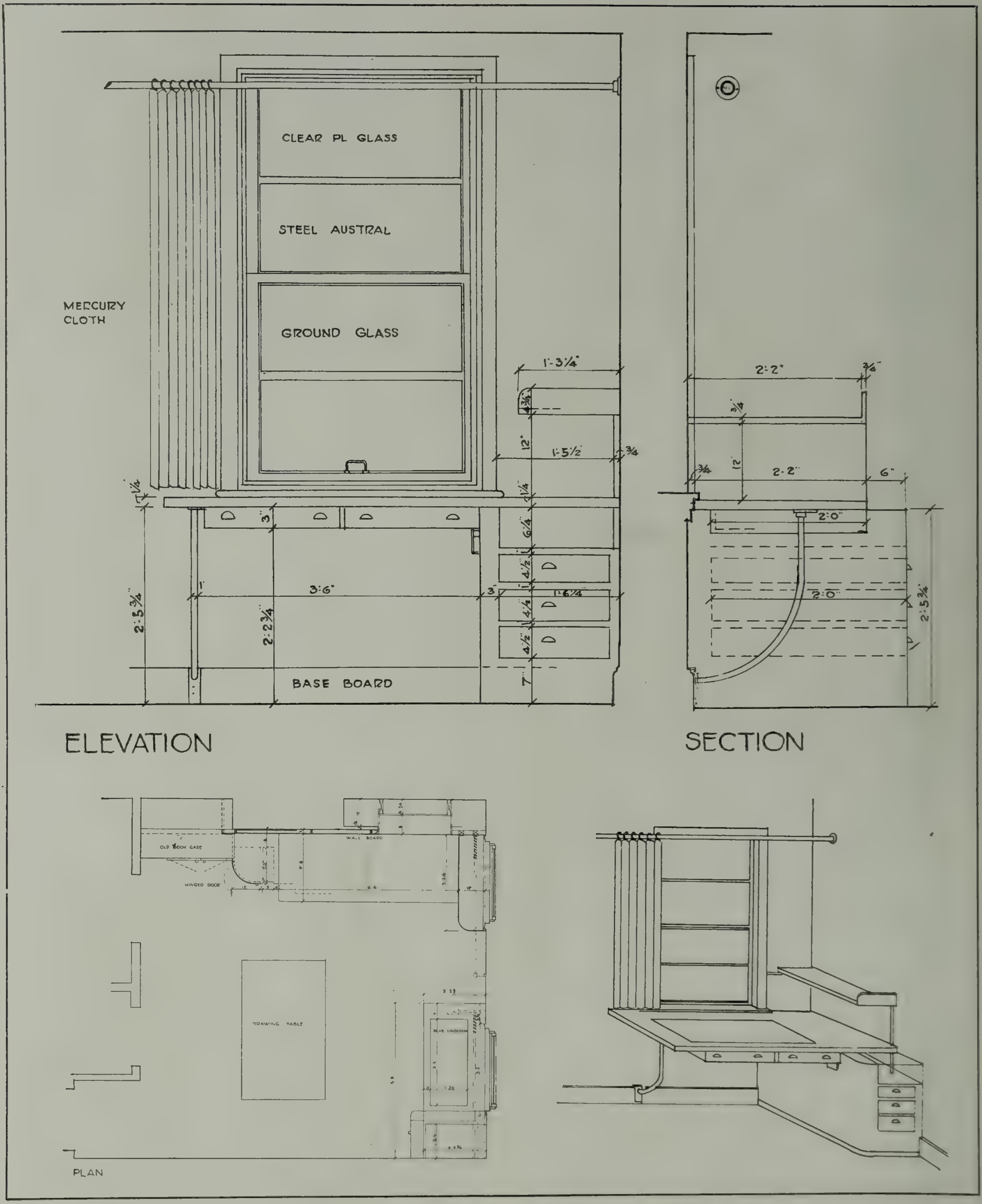
INTEGRITY TRUST COMPANY
PHILADELPHIA
PAUL P. CRET, ARCHITECT

President's office.



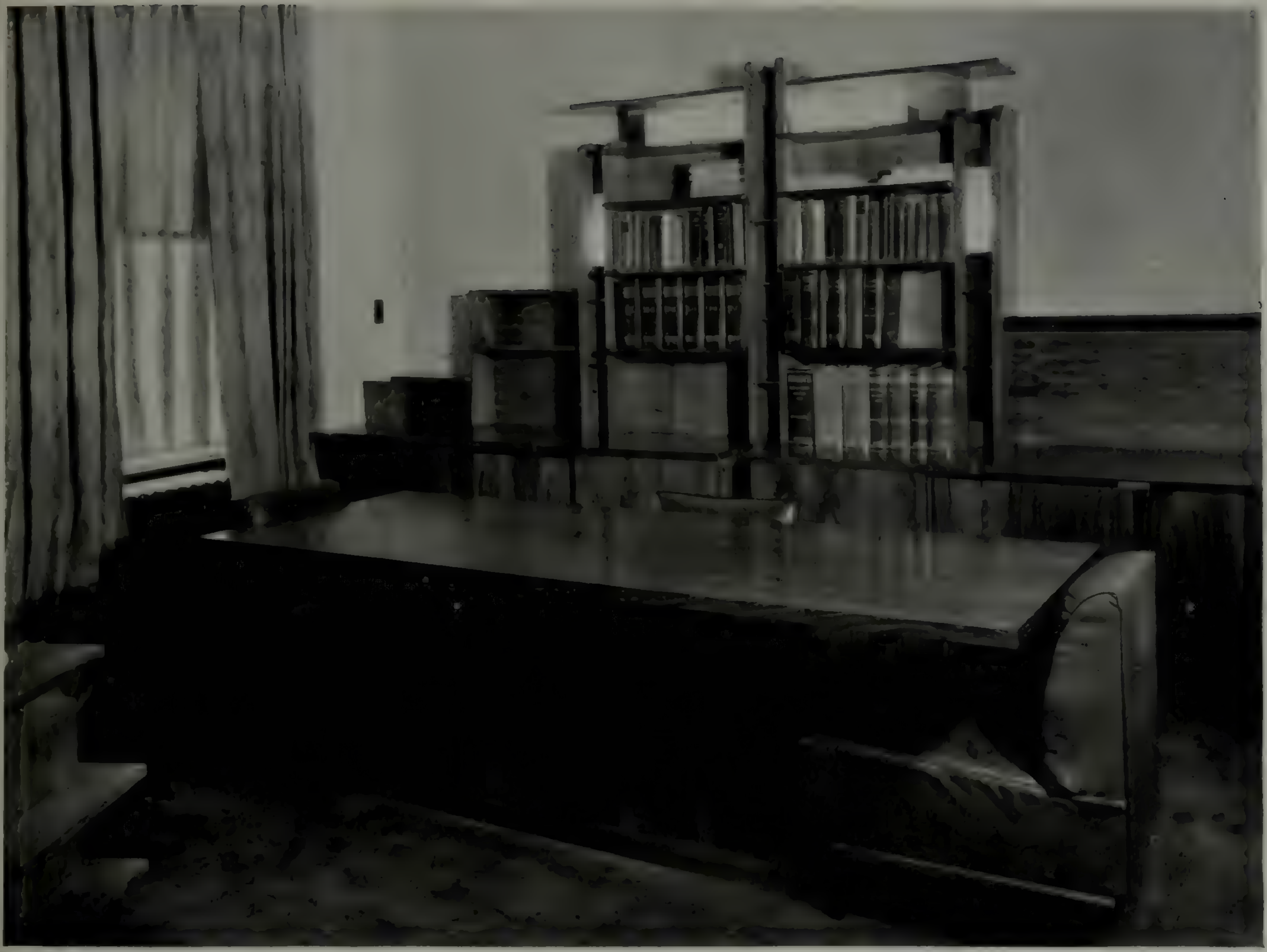
PHILADELPHIA OFFICE OF
HOWE AND LESCAZE, ARCHITECTS

Working details of this desk are shown on next page.



PHILADELPHIA OFFICE OF
HOWE AND LESCAZE, ARCHITECTS

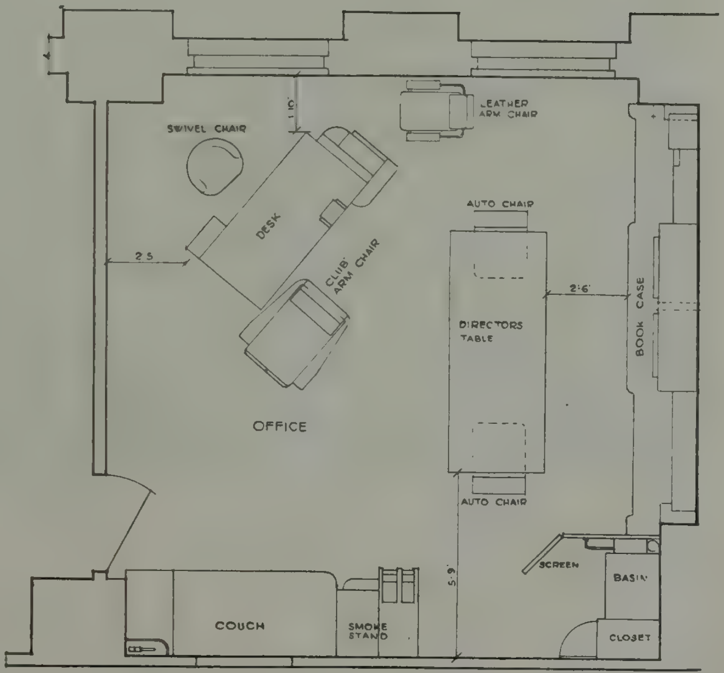
Working details of writing desk.

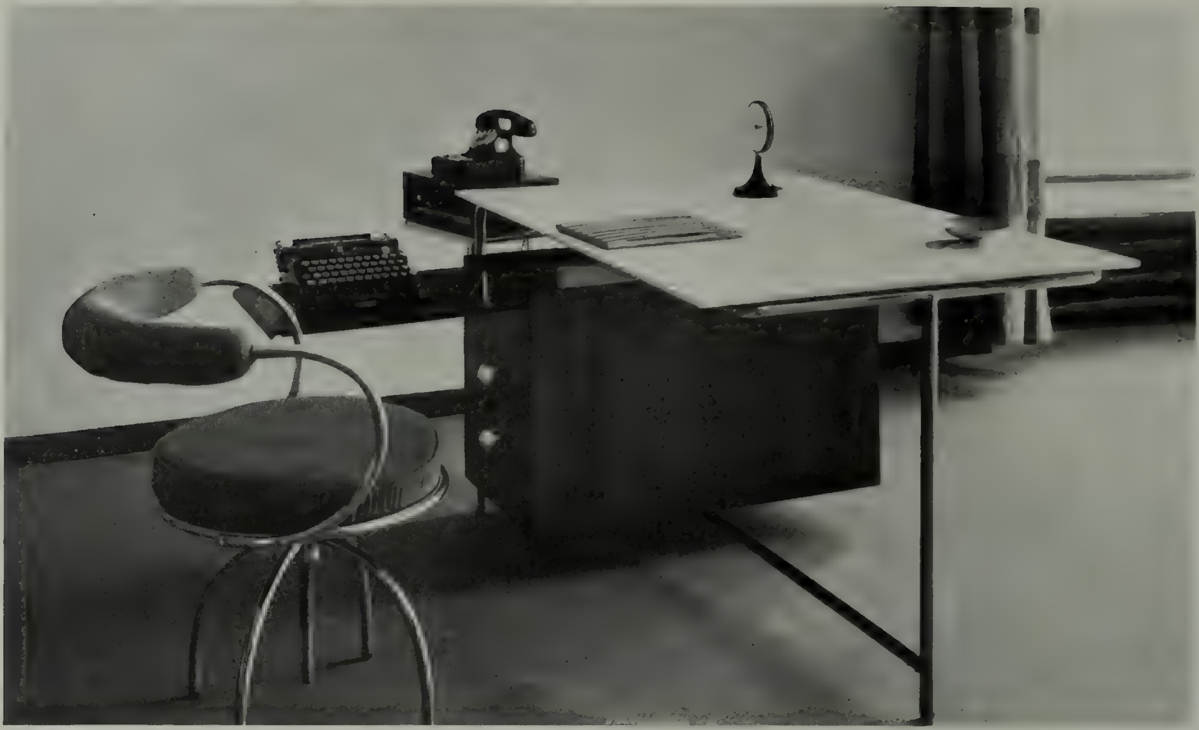


Louis Condax

OFFICE OF WILLIAM STIX WASSERMAN
PHILADELPHIA
HOWE AND LESCAZE, ARCHITECTS

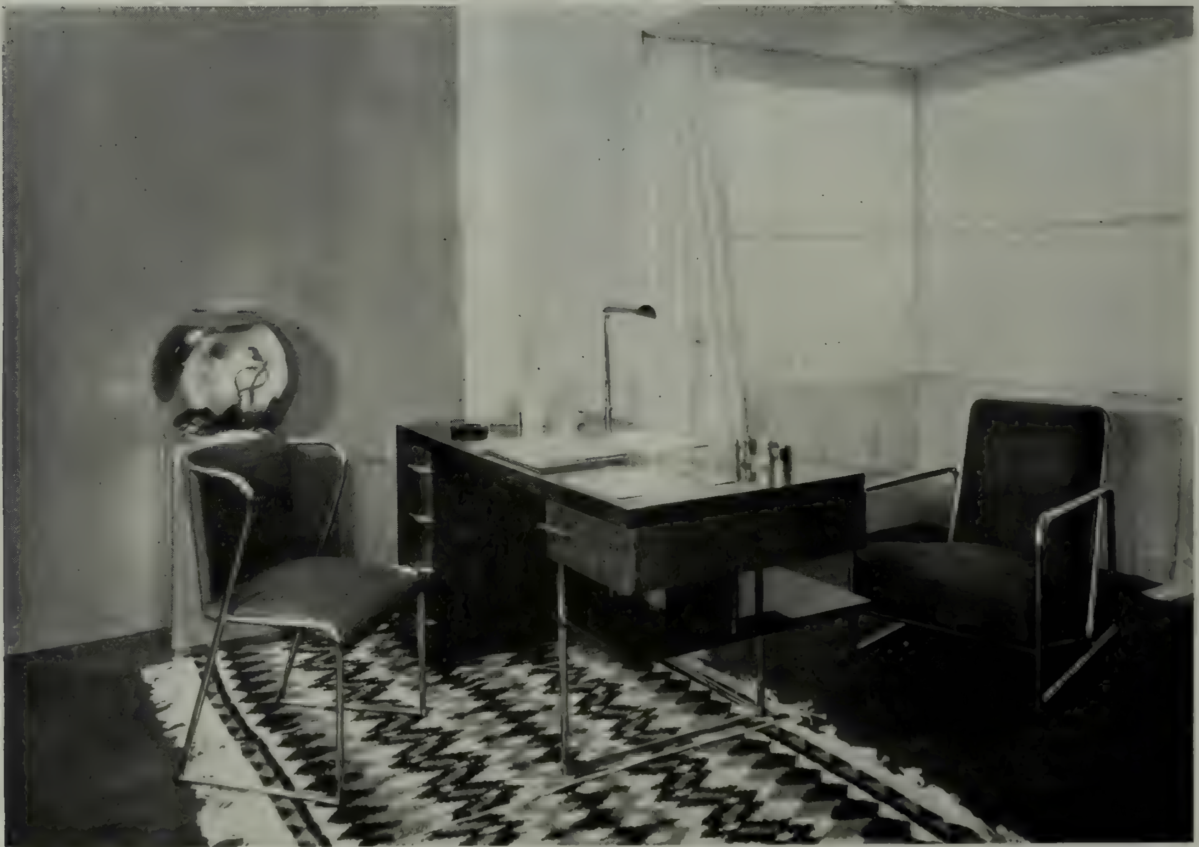
Board of directors' room.





Klette photo

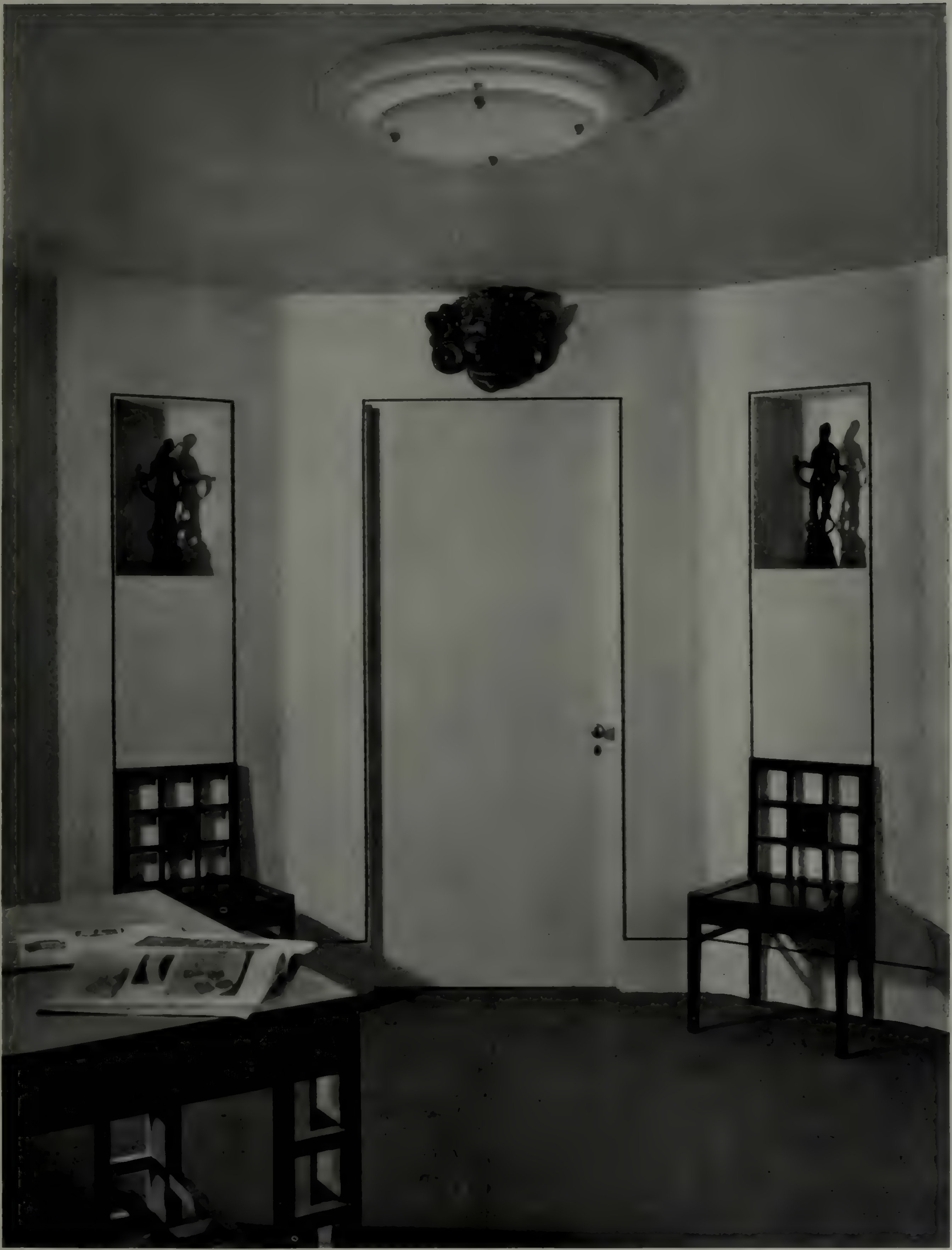
WRITING DESK IN MODEL HOUSE AT BRESLAU, GERMANY
HEINRICH LAUTERBACH, ARCHITECT



Bonney

STUDIO CORNER OF HOUSE IN PARIS
DESIGNED BY SOGNOT

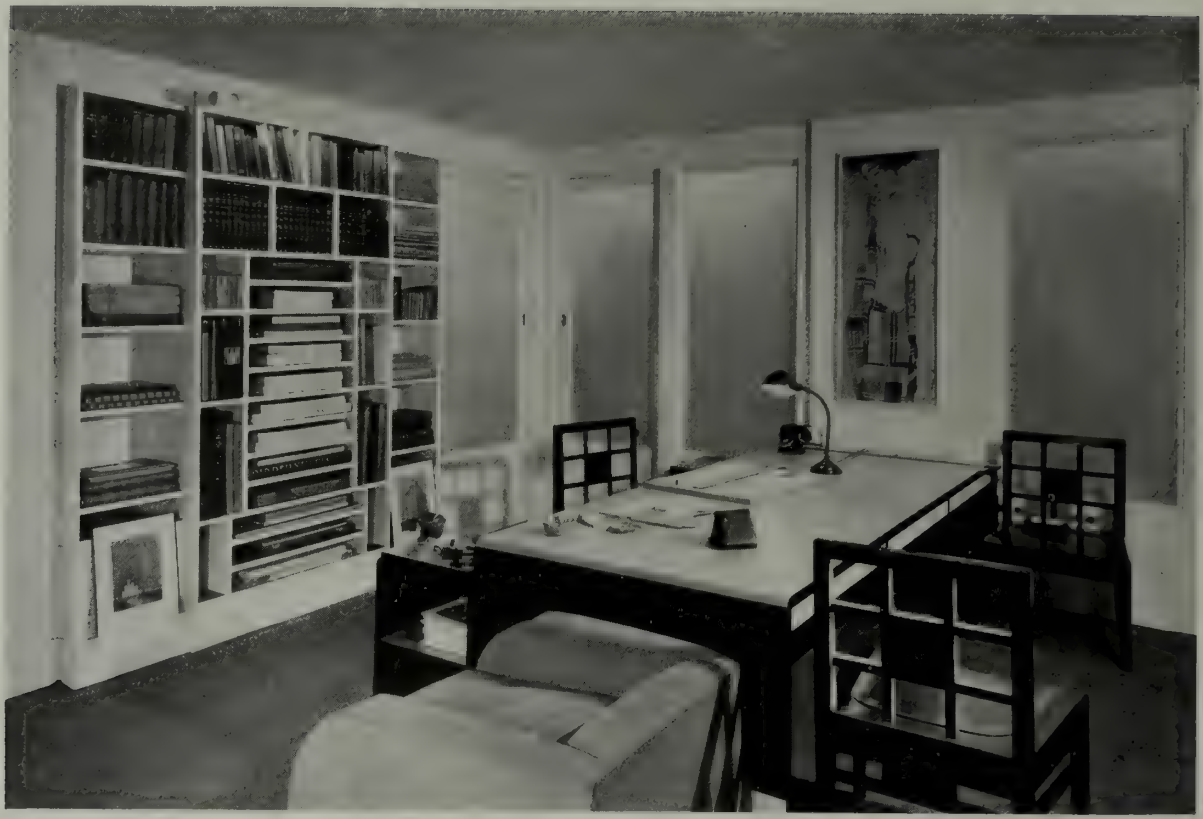
Furniture of mahogany and silvered metal. Chairs upholstered in red horsehair.

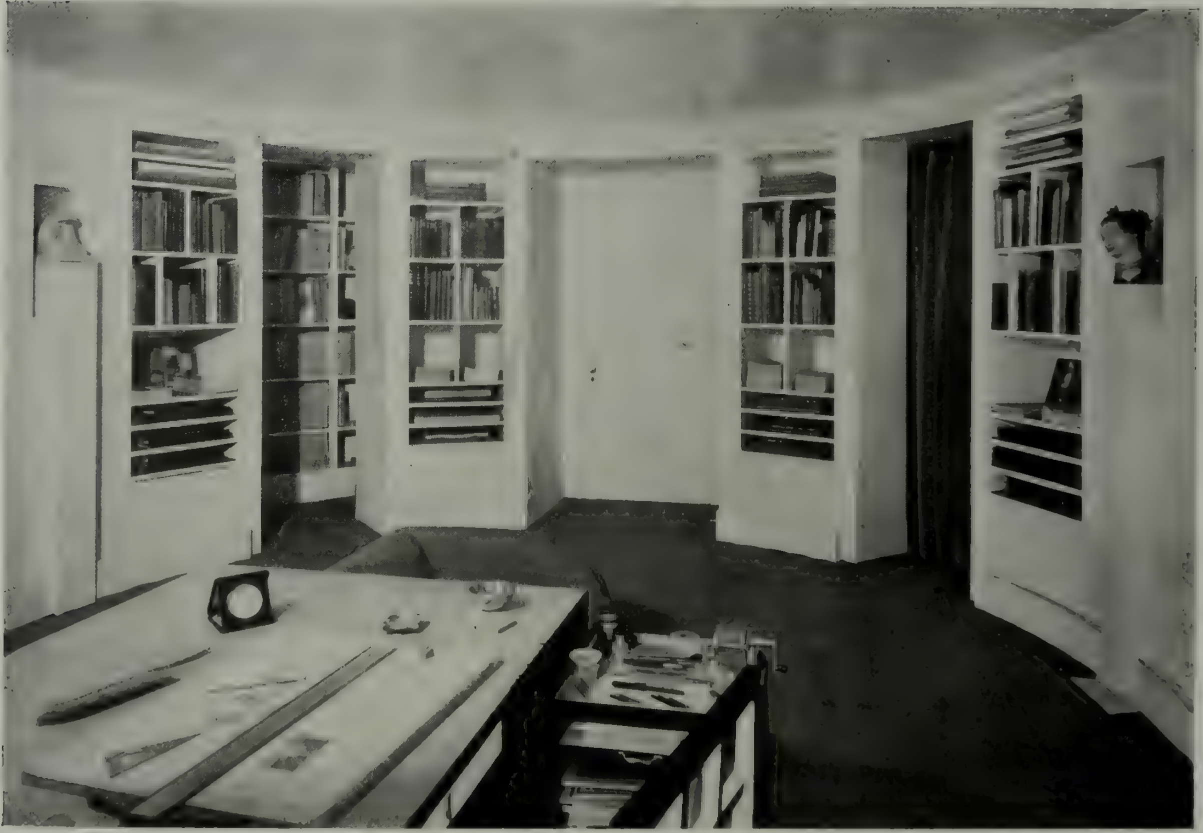


Nyholm and Lincoln

RECEPTION ROOM
OFFICE OF JOSEPH URBAN, ARCHITECT

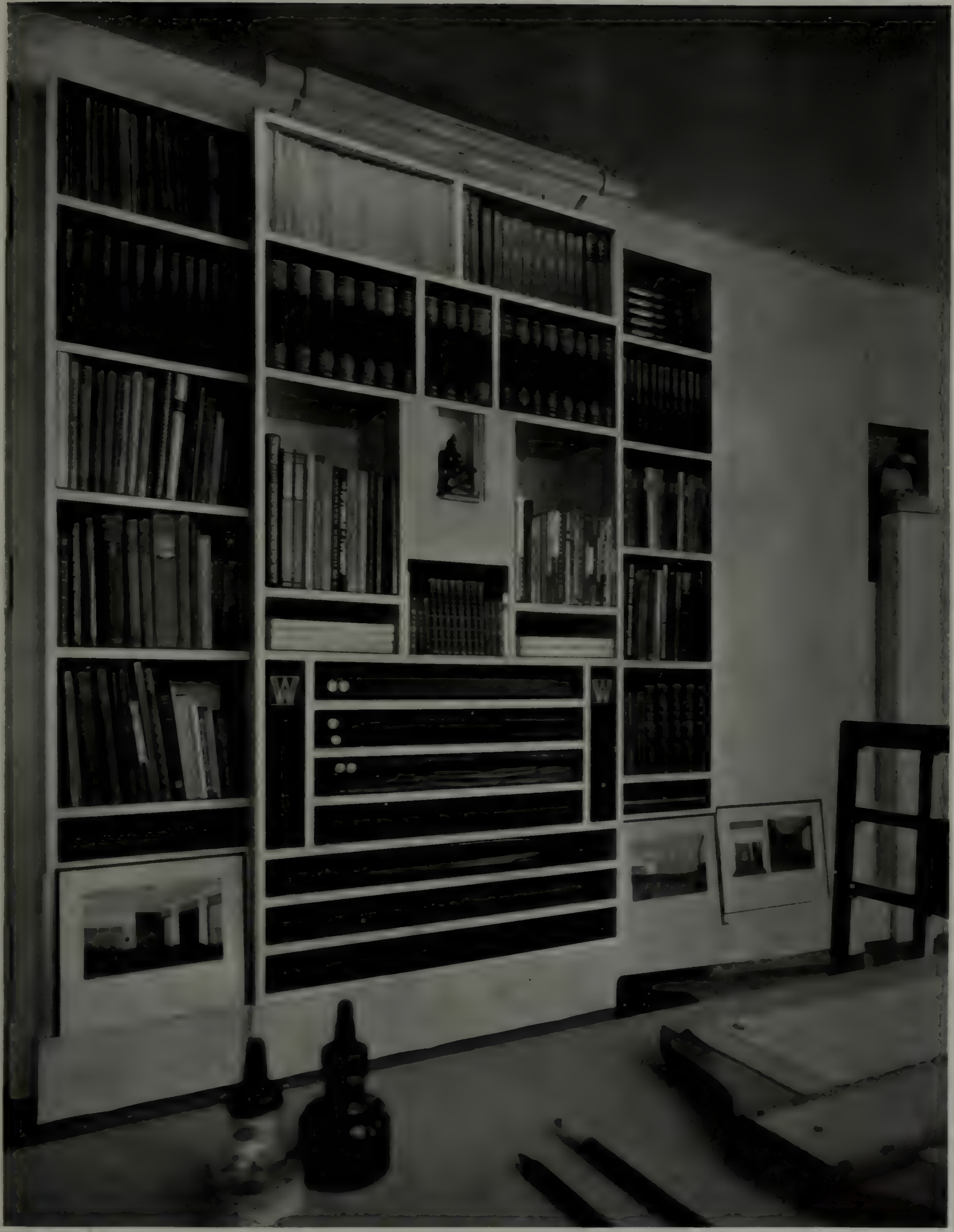
Color scheme in black and white. Doorways and niches framed by black beaded molding.





Nyholm and Lincoln

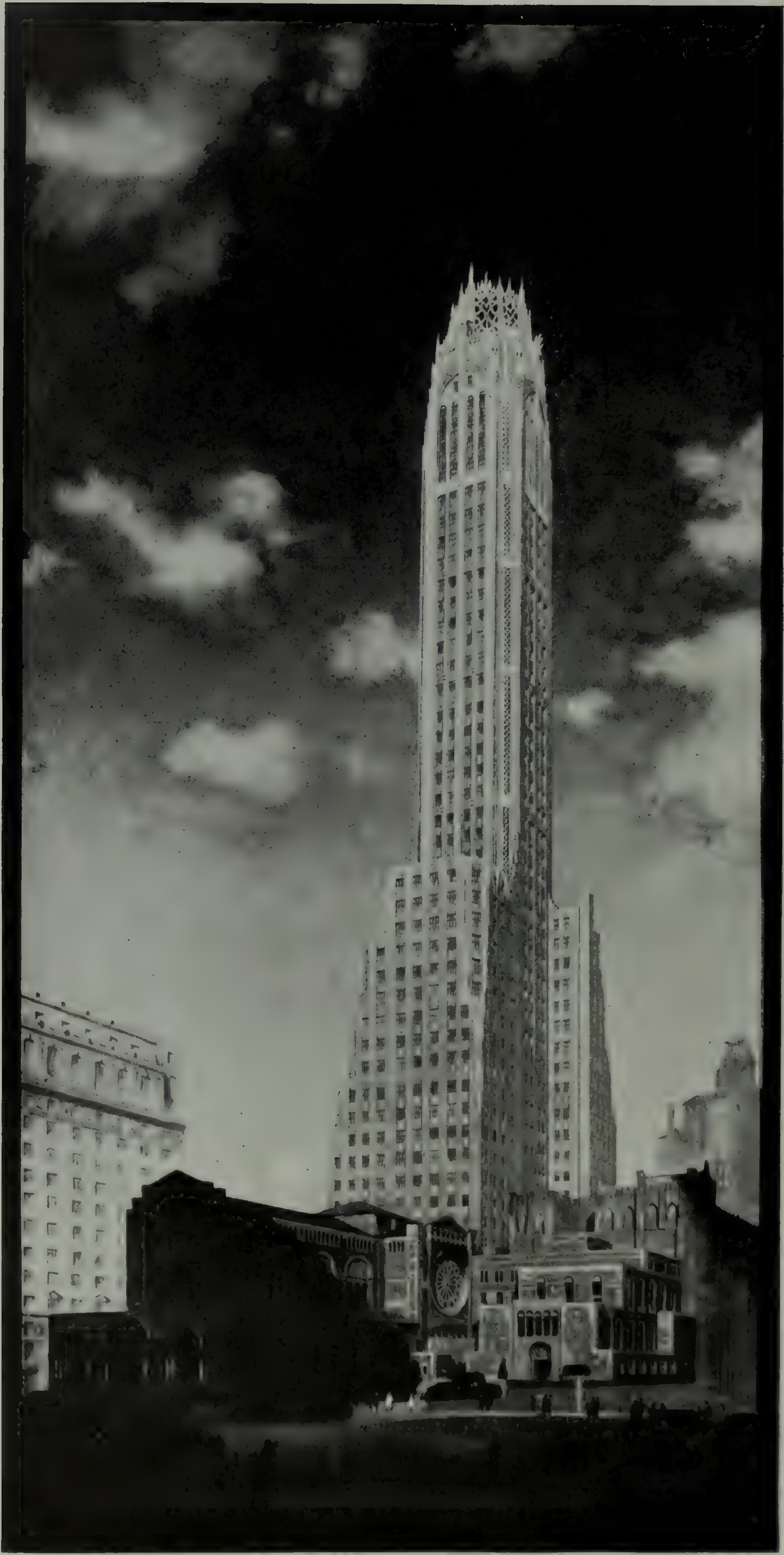
PRIVATE OFFICE AND LIBRARY
OFFICE OF JOSEPH URBAN, ARCHITECT



Nyholm and Lincoln

PRIVATE OFFICE AND LIBRARY
OFFICE OF JOSEPH URBAN, ARCHITECT

Color scheme in black and white. Red vermilion suede cloth upholstery for chairs.



Cameragraph by Palmer Shannon

OIL RENDERING
BY CHESLEY BONESTELL
50-STORY BUILDING
AT 570 LEXINGTON AVE.,
NEW YORK CITY
CROSS AND CROSS,
ARCHITECTS

REPRODUCING ARCHITECTS' RENDERINGS

By PALMER SHANNON

Sketches and renderings have always been of great value to the architect in conveying his ideas to others. There is a constant need for perspectives and details of office buildings, banks, residences, schools and churches, particularly of buildings so situated that the camera has small chance to show them to advantage.

Duplicates—not mere photo-copies but reproductions that rival the originals in perfection—are of obvious value to the architect. In presenting a new project to a committee he is not limited to his original rendering but may have as many "originals" as he desires. Duplicates are also needed for purposes of record and publicity.

The draftsman, renderer or artist who makes the perspectives should keep in mind several considerations which will assist him in making the sketches more suitable for reproduction.

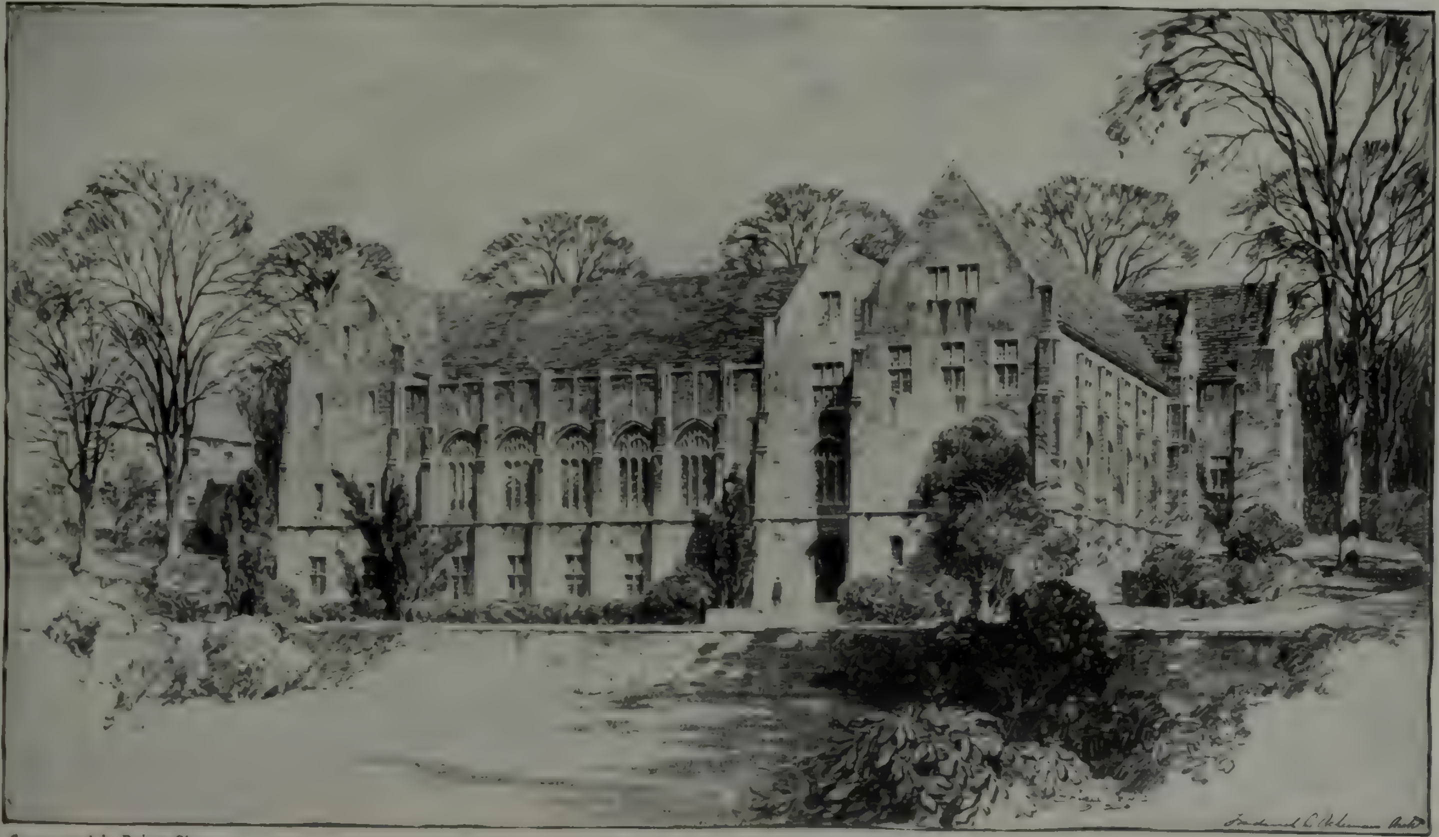
PAPER

Paper is the first thing to consider in making a black and white rendering which is to be reproduced. If tracing paper is used, it is desirable that the surface be white. There are many grades of so-called white tracing paper, but a dead-white tissue without any glaze is essential. If a very thin tracing paper is chosen with the intention of floating it when finished, the mount should be white and the best grade of transparent paste used. The tone of a reproduction of a tracing paper rendering will be a shade better if it is reproduced before the drawing is mounted. A good method of mounting is to use cement outside the margin of the drawing; in this way it can be reproduced as well after mounting as before.

If working on drawing paper or board, it is well to keep to dead-white surfaces. A fine combination for reproduction, however, is cameo paper and carbon pencil. Gray or colored papers are advantageous only when certain effects are desired, e. g., a white building on a dark background (pencil and chinese white on a gray or brown paper). Needless to say, the cleaner the drawing, the cleaner the reproduction.

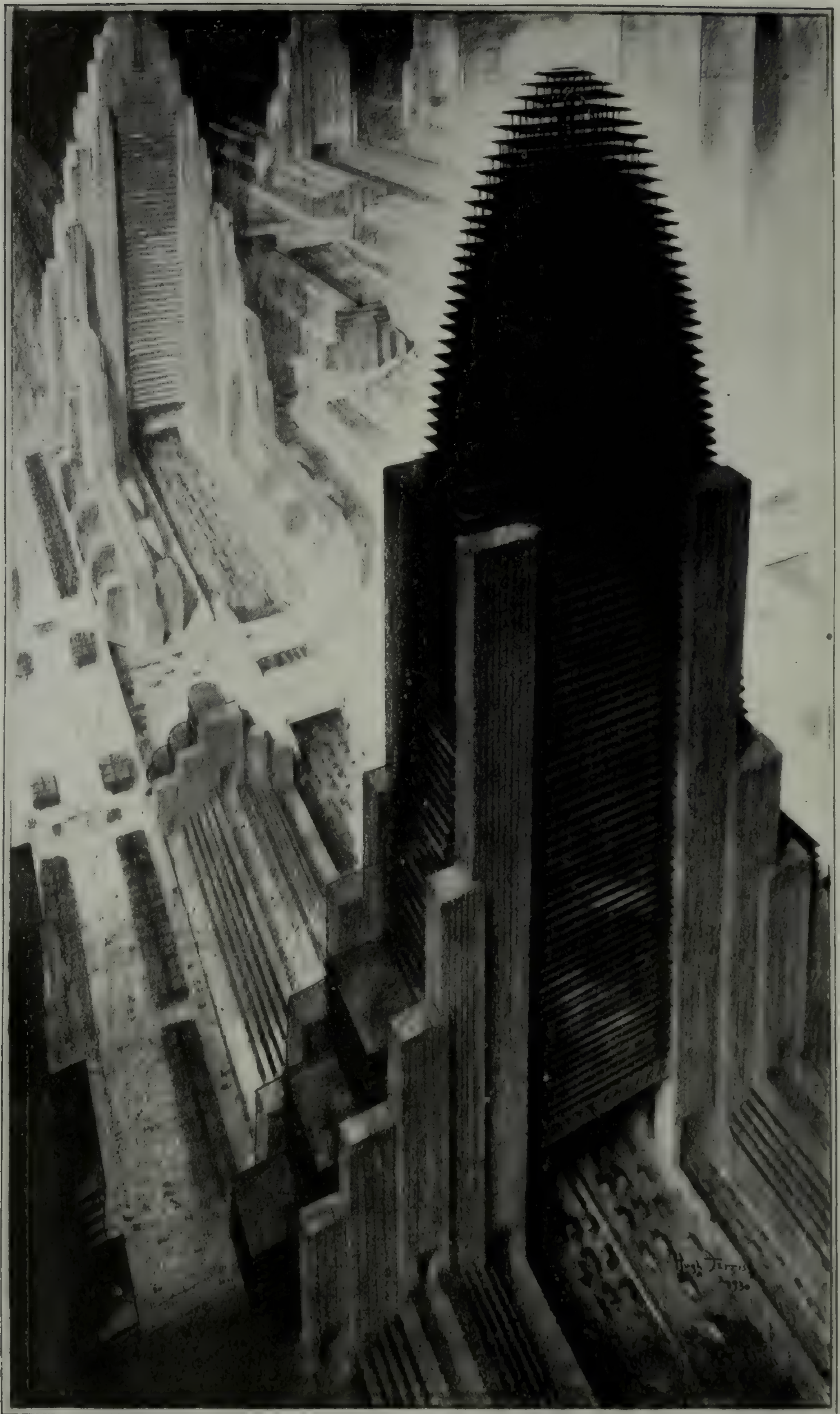
FIXATIF

It is very important that a fine quality fixatif be used correctly, that is, applied smoothly. This



Cameragraph by Palmer Shannon

GRAPHITE PENCIL SKETCH ON TRACING PAPER BY SCHELL LEWIS
FREDERICK L. ACKERMAN, ARCHITECT



Cameragraph by Palmer Shannon

CRAYON DRAWING AND DESIGN BY HUGH FERRISS point should be accentuated, as many drawings have been made unfit for good reproduction by faulty or careless fixing.

MEDIUMS

When pencil is the delineating medium, the drawing should not be excessively light and delicate. In the use of graphite pencil, care should be taken to avoid making a surface that causes a sheen or reflection. For heavy dark effects, a carbon, litho or some similar pencil is best for reproduction.

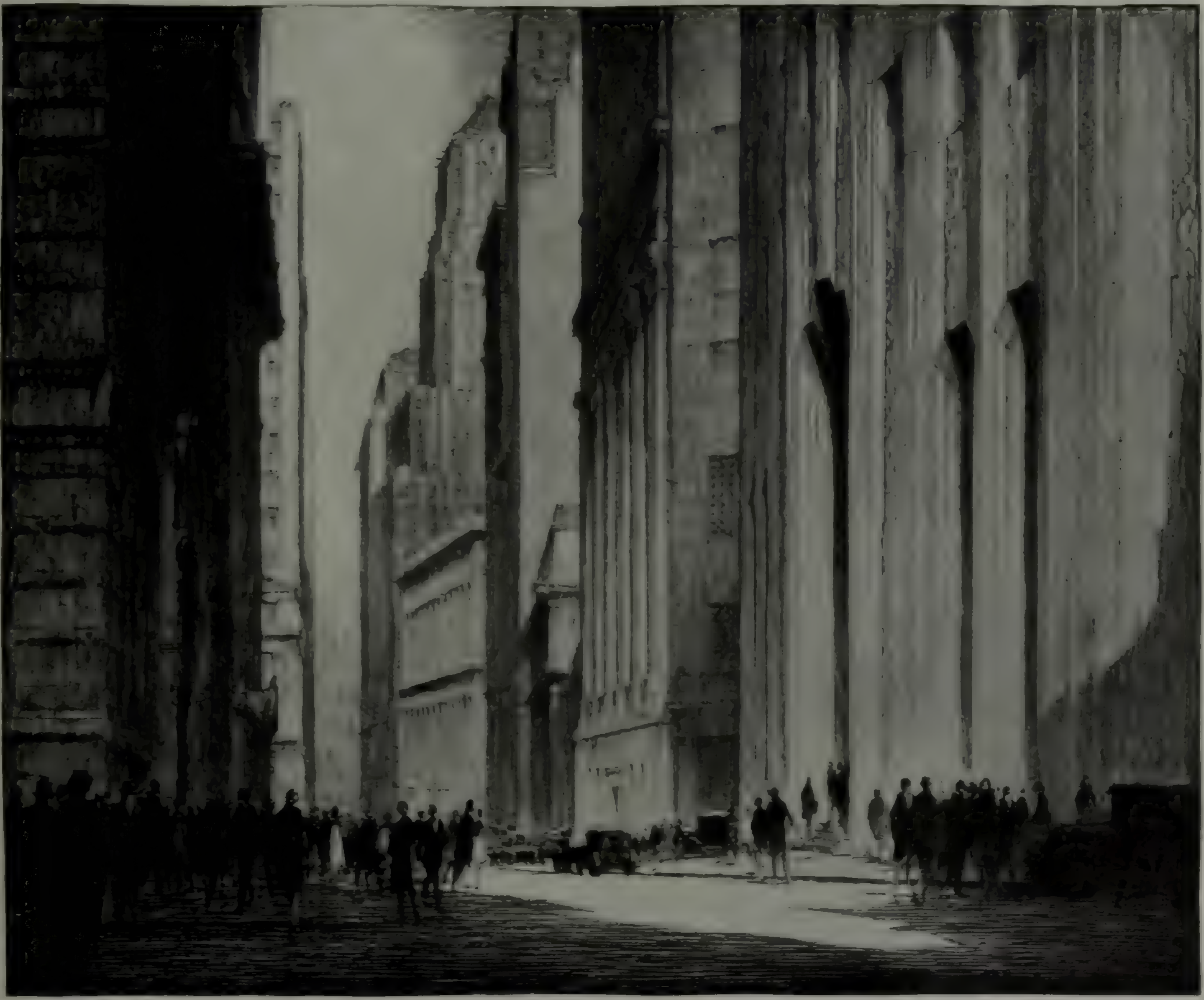
The strong line of pen-and-ink is relatively simple to reproduce.

Charcoal or black crayon may be used to the fullest range of tone values and will reproduce identically.

With water color, tempera, oil or other color media great care should be taken to get correct tone values. Color means nothing. A bright red placed beside a blue will not serve its purpose of contrast if the tone value of the red is the same as the tone value of the blue. Too little study is given to this subject by the beginner in color rendering. A *good* wash drawing is a fine example of tone value and will reproduce well, but too many color drawings are sadly lacking in this very necessary requirement.

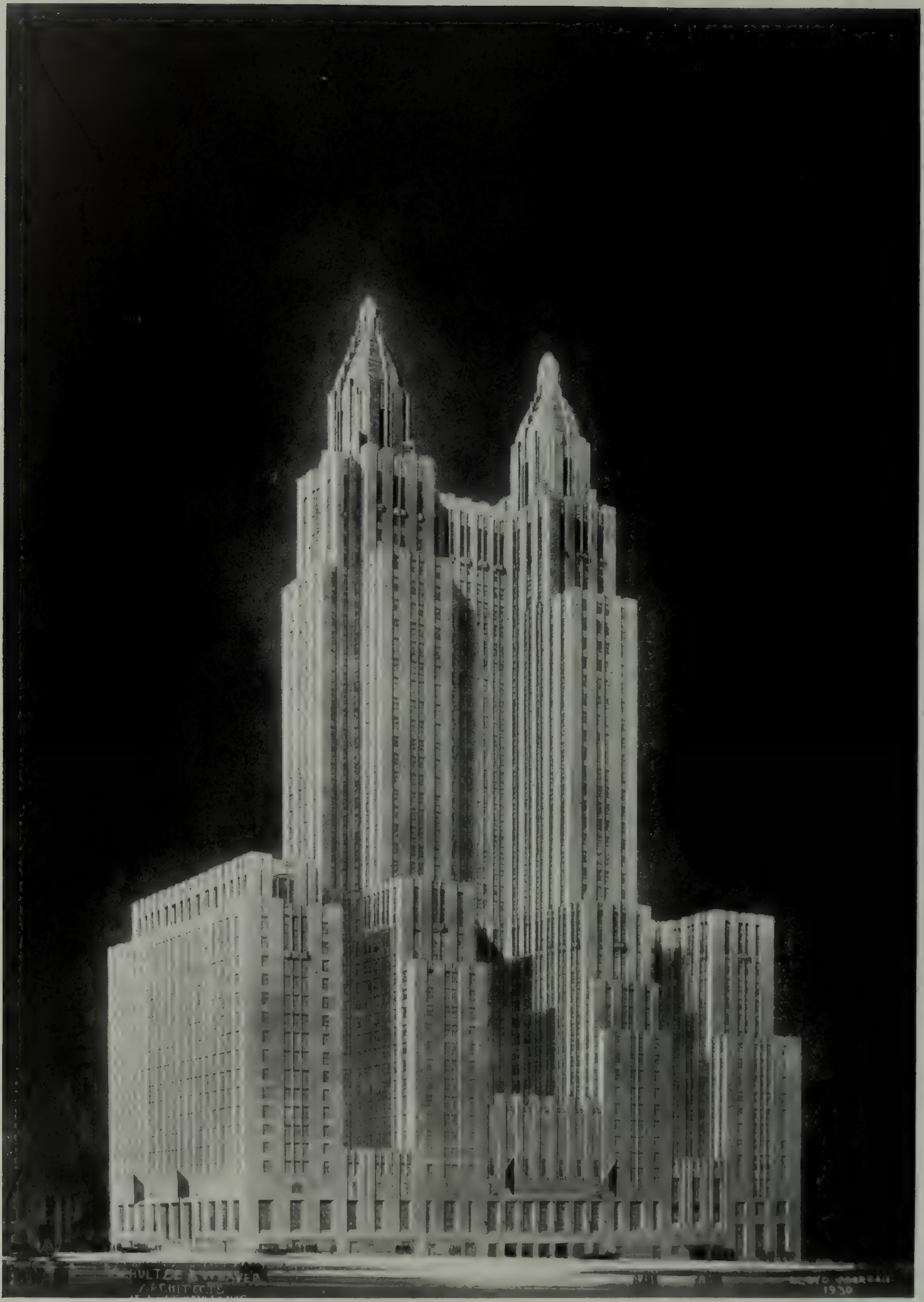
IDENTIFICATION

All renderings should be signed, monogrammed or initialed. For cataloging purposes, a title or at least a project number should accompany all drawings. If the title is to be included in the reproduction, it should be placed on the drawing, not on the mat. Both title and number are important as they serve to identify the work, thus preventing misclassification, which frequently leads to costly errors.



Cameragraph by Palmer Shannon

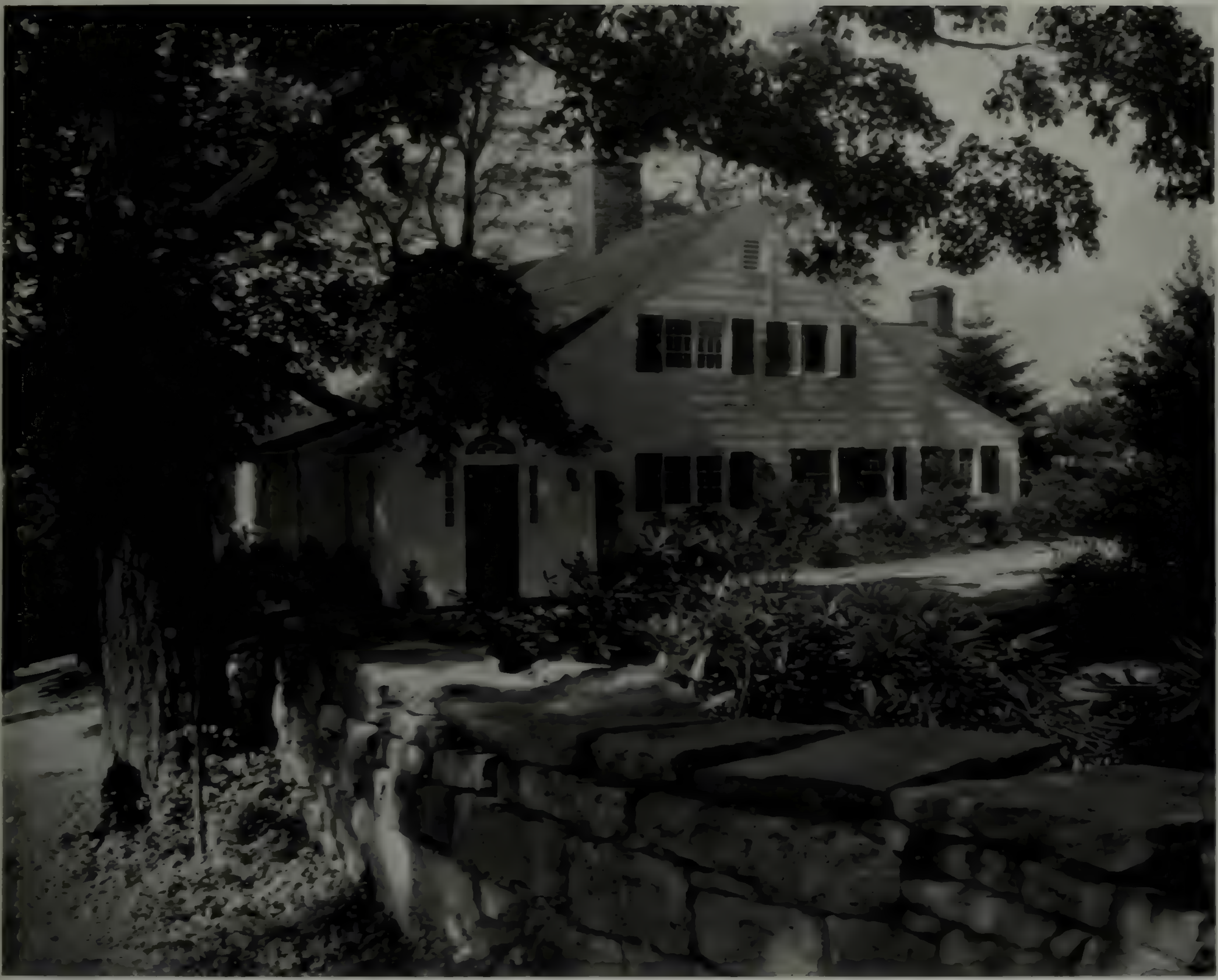
CARBON PENCIL SKETCH ON CAMEO PAPER BY CHESTER B. PRICE
DRAWING OF WALL STREET AND IRVING TRUST COMPANY BUILDING



Cameragraph by Palmer Shannon

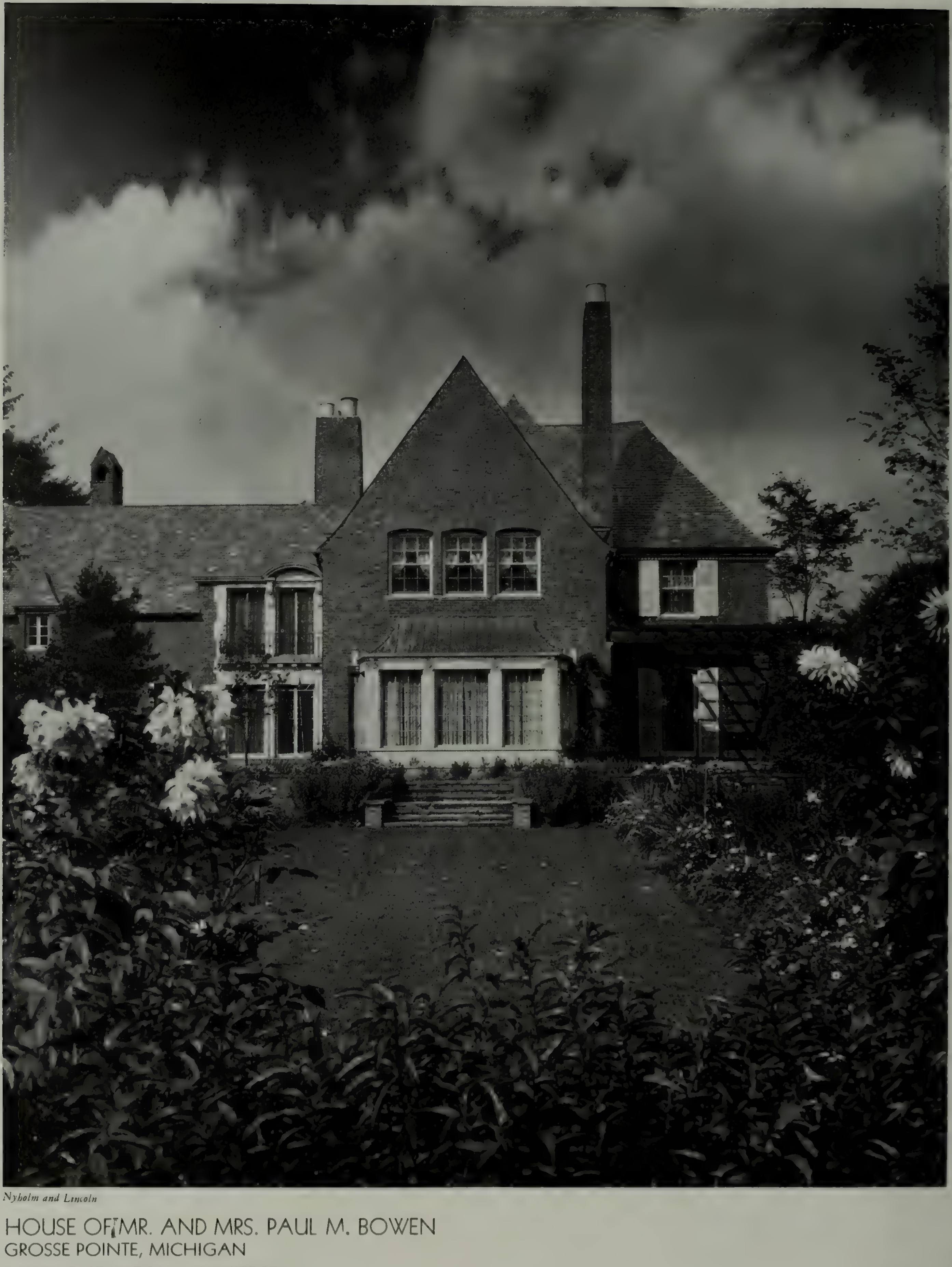
WASH DRAWING BY LLOYD MORGAN
HOTEL WALDORF-ASTORIA, NEW YORK
SCHULTZE AND WEAVER, ARCHITECTS

PORTFOLIO OF HOUSES



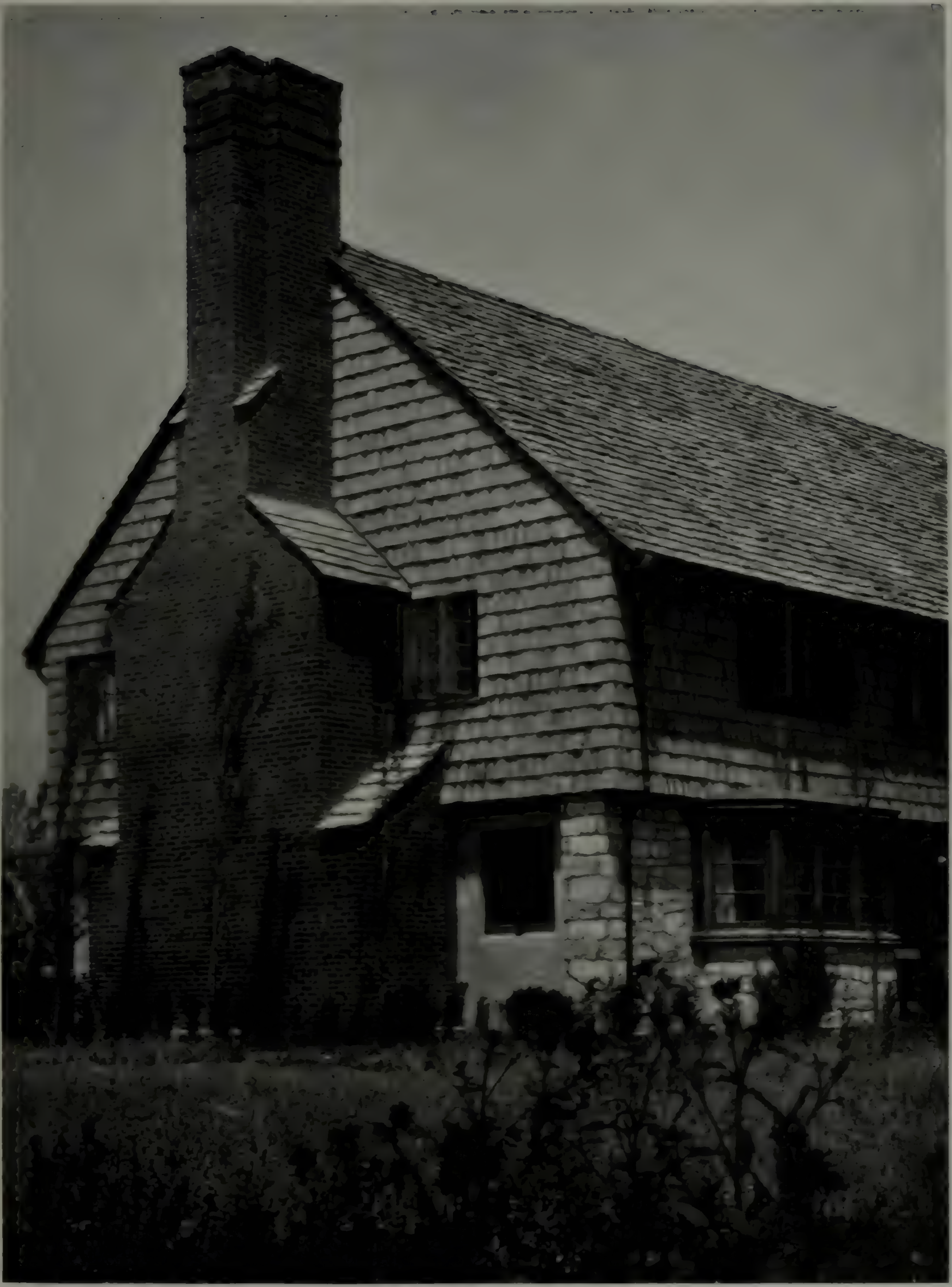
Gottscho

HOUSE OF FRANK C. ROOT
GREENWICH, CONNECTICUT
WILLIAM F. DOMINICK, ARCHITECT



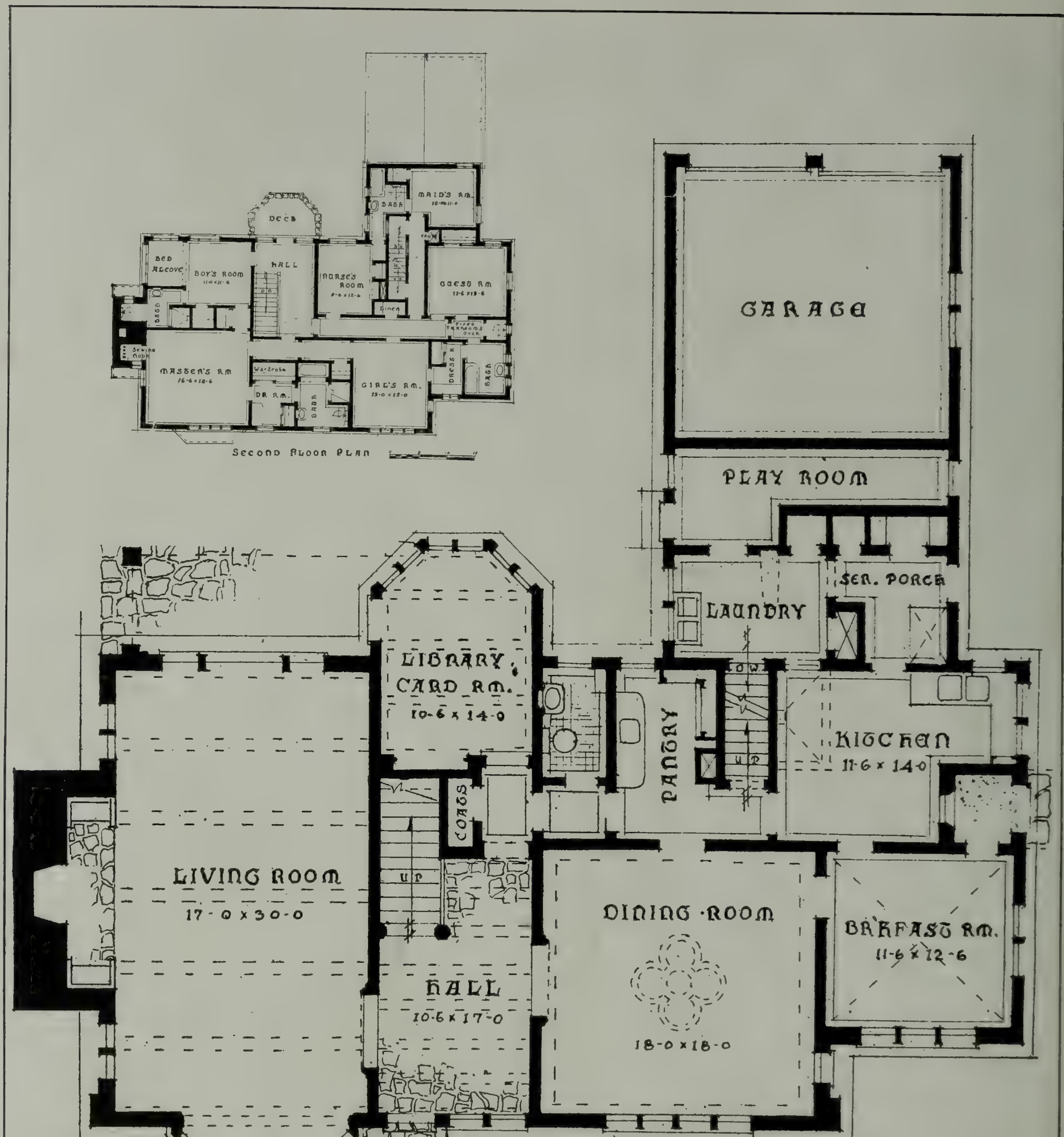
Nyholm and Lincoln

HOUSE OF MR. AND MRS. PAUL M. BOWEN
GROSSE POINTE, MICHIGAN
HENRY F. STANTON, ARCHITECT

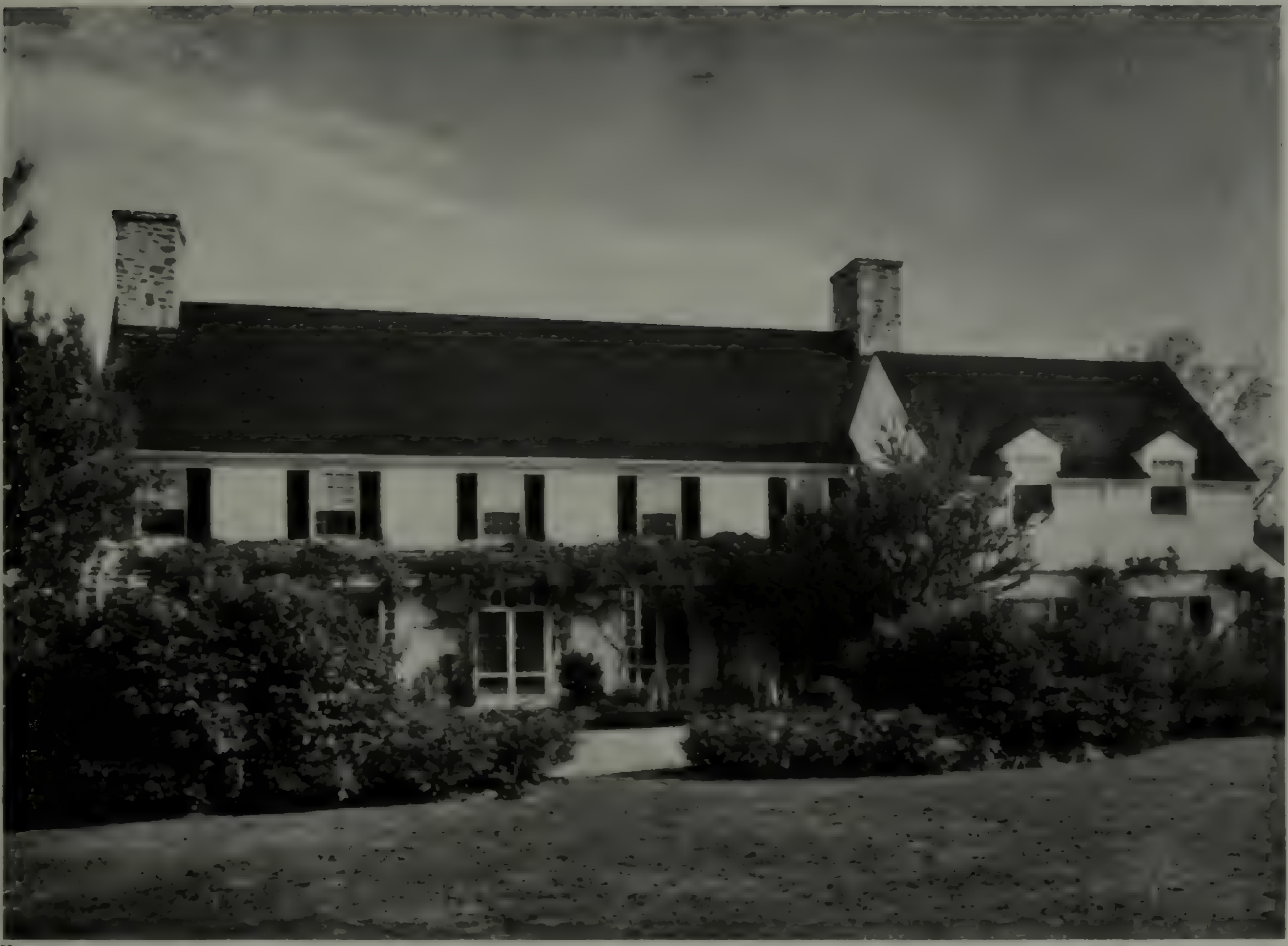


Berne

HOUSE OF CHESTER WURSTER
HOLLYWOOD, CALIFORNIA
NEWTON AND MURRAY, ARCHITECTS

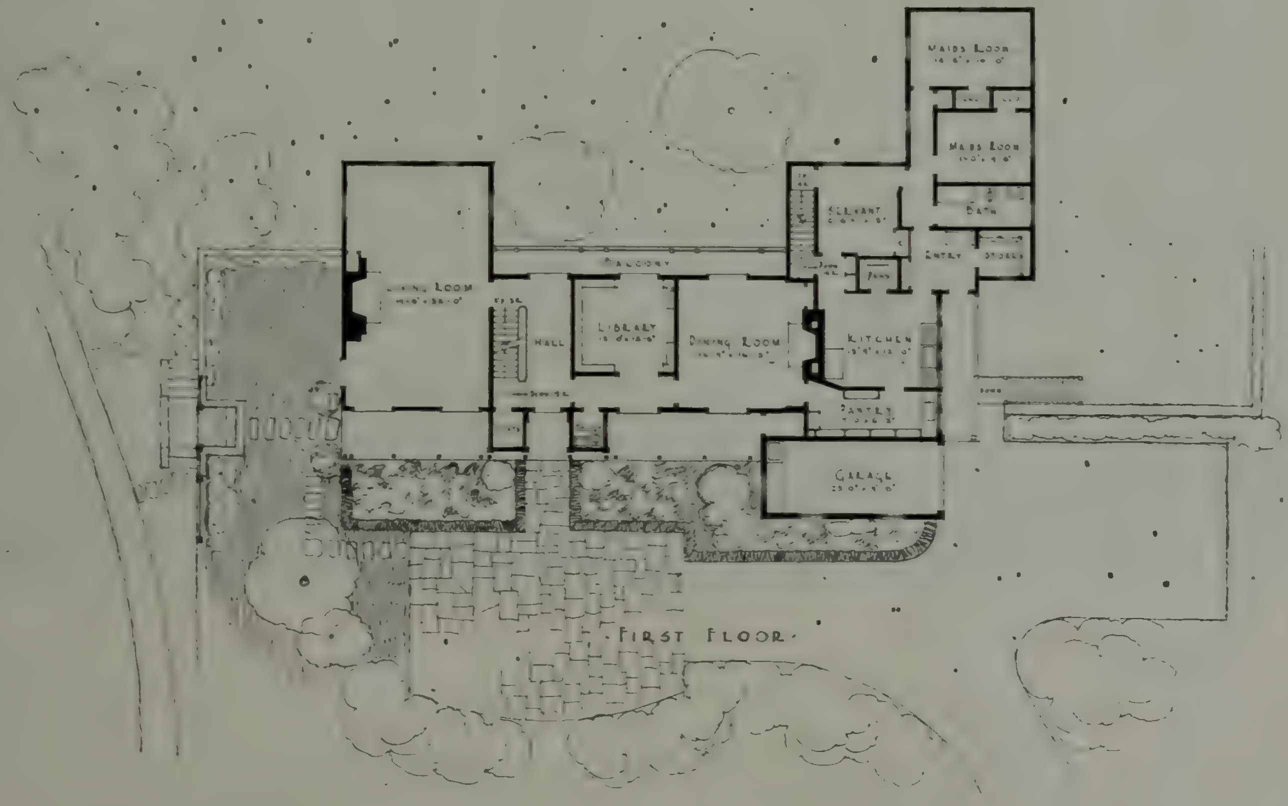


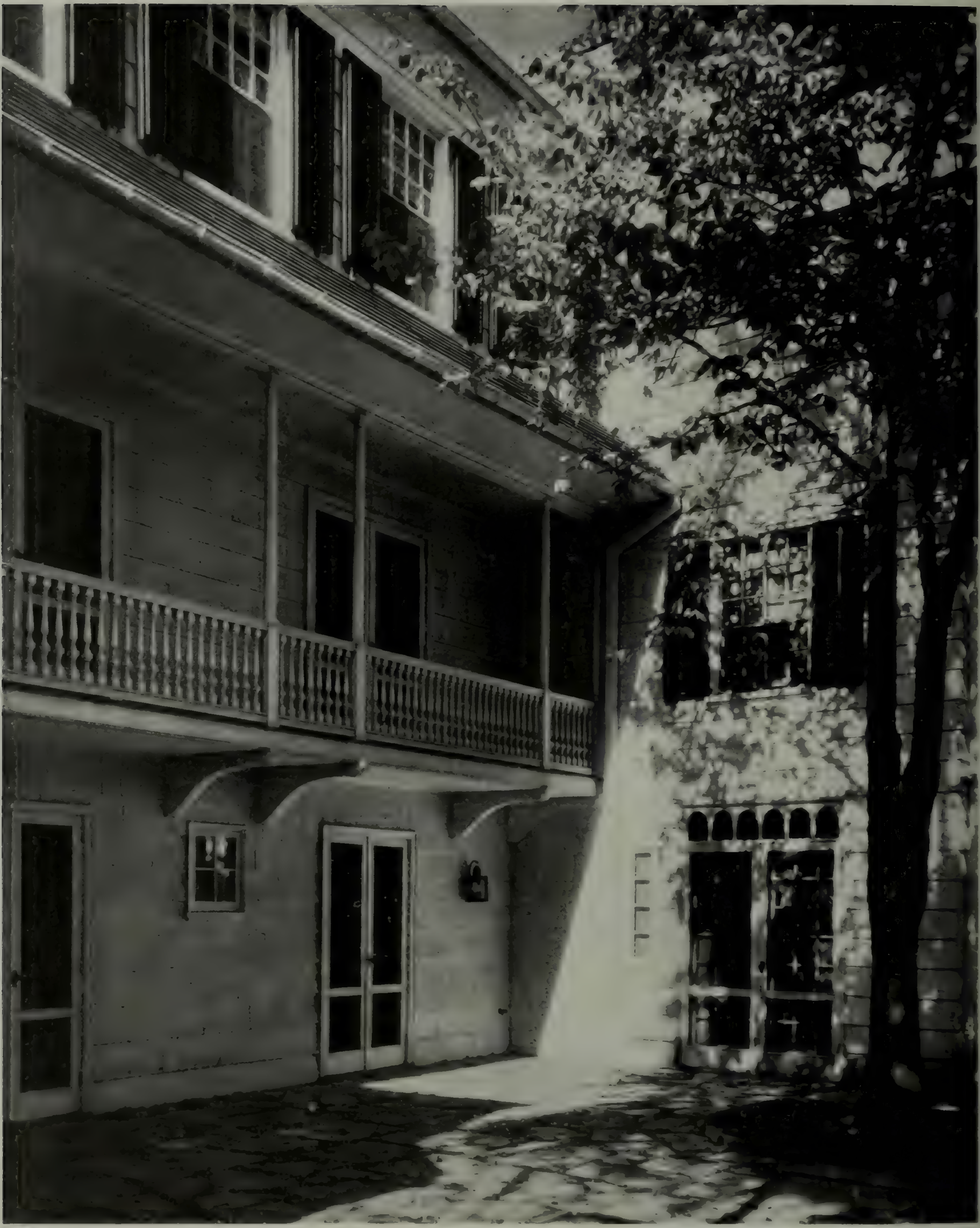
HOUSE OF CHESTER WURSTER
HOLLYWOOD, CALIFORNIA
NEWTON AND MURRAY, ARCHITECTS



Van Anda

HOUSE OF GARDNER HAZEN
RYE, NEW YORK
CAMERON CLARK, ARCHITECT





Van Anda

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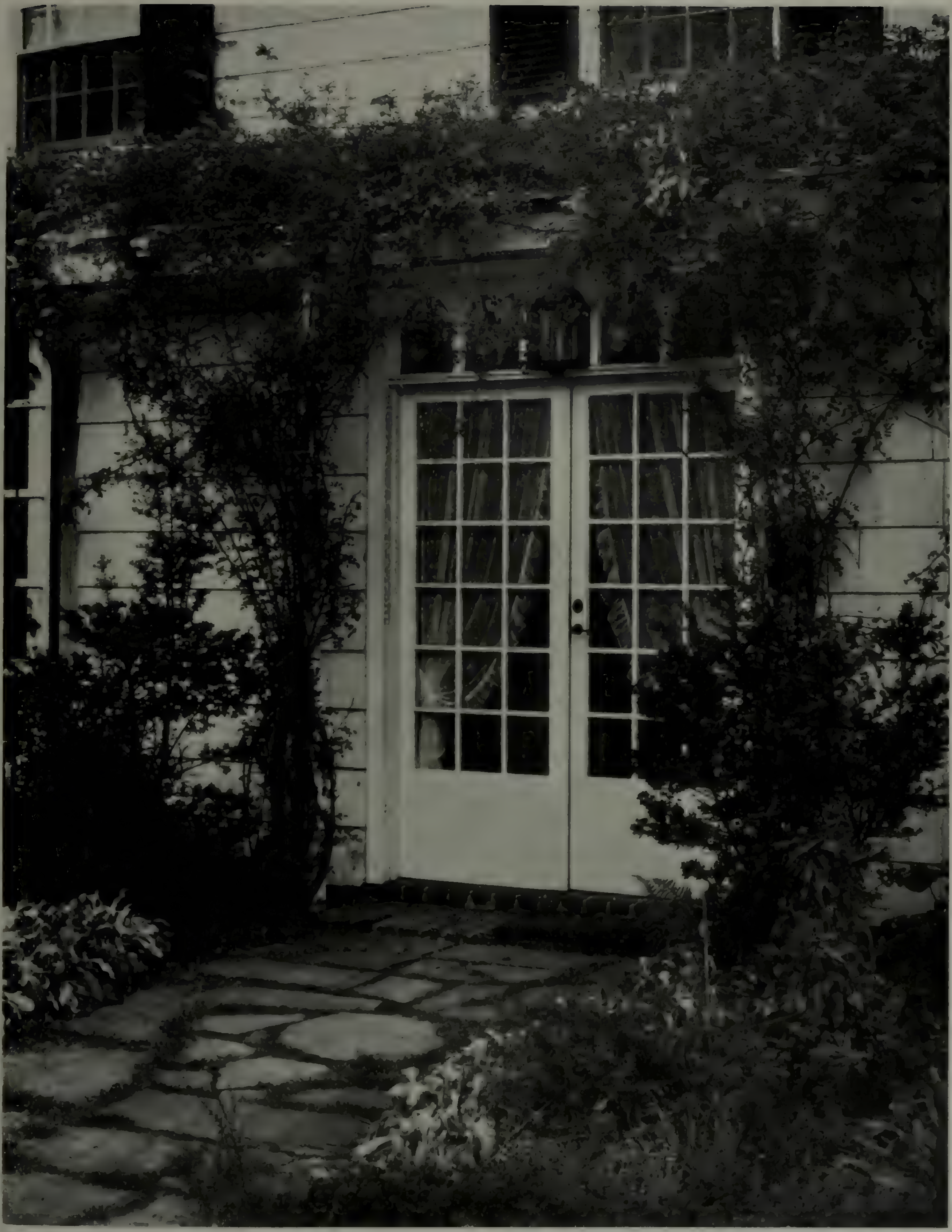
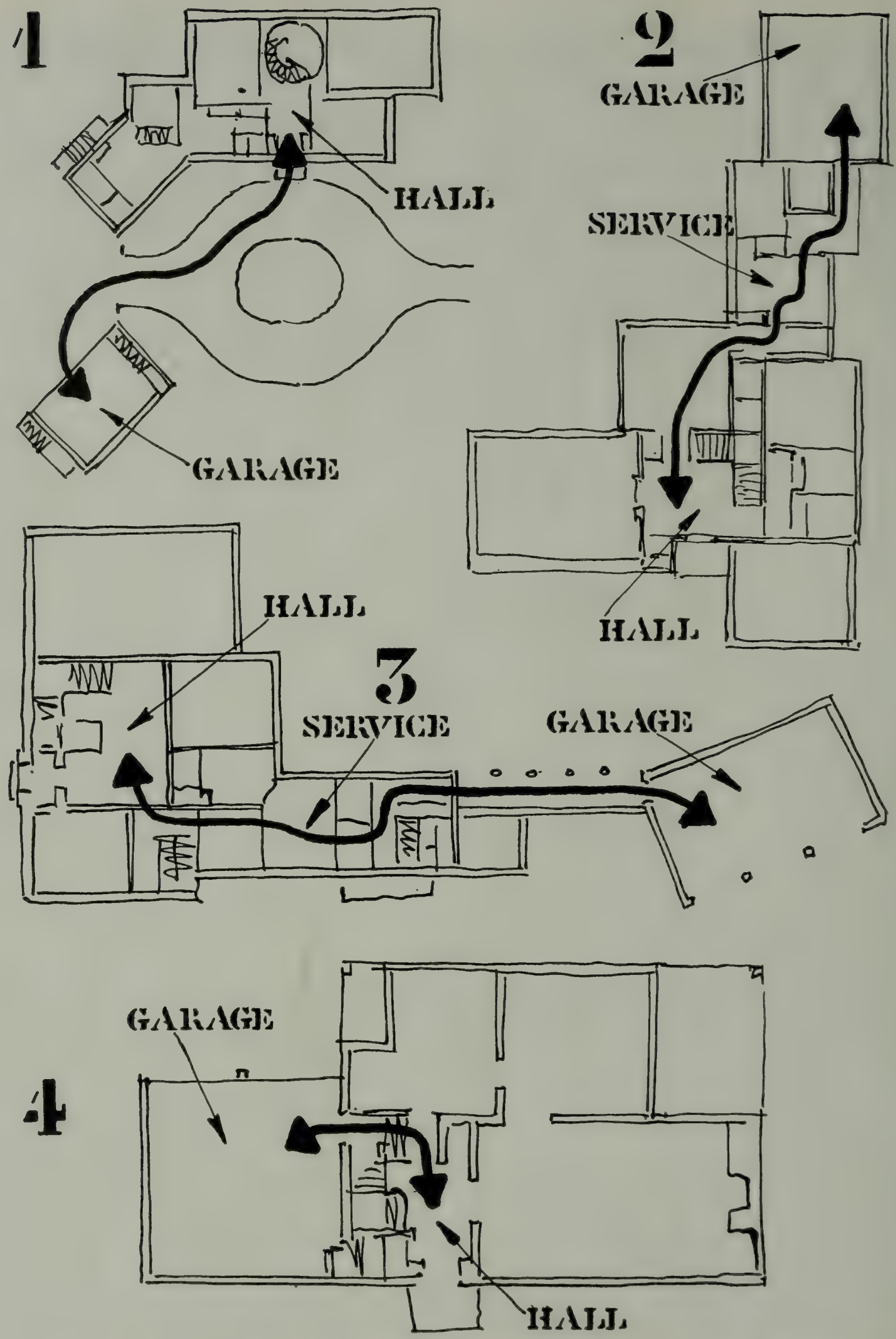
RYE, NEW YORK
CAMERON CLARK, ARCHITECT



Van Anda

HOUSE OF GARDNER HAZEN
RYE, NEW YORK
CAMERON CLARK, ARCHITECT



USUAL HOUSE PLANS SHOWING RELATION OF ENTRANCE HALL TO GARAGE

1. Garage separated from house. There is inconvenience in going outside to reach garage.
2. Garage incorporated in house plan. Undesirable passage from stairhall to garage through dining and service rooms.
3. Plan with same objections and additional separation by open-air cloister.
4. Most direct relation of hall and garage. This is a desirable arrangement since you can conveniently enter and leave house by motor car.

PLANNING THE HOUSE GARAGE

PURPOSE

The house garage should be considered as the entrance to the house.

It should be readily accessible from the stair hallway.

It should be reached as directly as possible from the street.

Storage space should be provided for one or more cars.

CUBIC AREA

The garage size is determined by automobile sizes and utilitarian uses to which the house garage is put.

*Dimensions of Motor Cars**

Length: 12′ 11¼″ (Ford A) to 18′ 8″ (Cadillac 353).
Width: 5′ 2″ (Essex D) to 6′ 0″ (Cord L29).
Height: 5′ 3″ (Ruxton) to 6′ 5″ (Lincoln).

Dimenions of House Garage

One-Car Garage
Inside Length: 17′ 0″ to 21′ 0″.
Inside Width: 9′ 0″ to 12′ 0″.
Inside Height: 7′ 4″ to 9′ 0″.

Two-Car Garage
Inside Length: 17′ 0″ to 21′ 0″.
Inside Width: 16′ 0″ to 18′ 0″.
Inside Height: 7′ 6″ to 9′ 0″.

Additional floor area may be required when provision is made for work space, coat room, storage and toilet facilities.

DOORS

Overhead and side sliding doors are preferred to doors that swing outward. The latter are objectionable because of their difficulty of operation when snow drifts against doorway and in windy locations. Overhead and side sliding doors require no space needed for car storage. The overhead type of door is necessary where curbs, as in illustration, are installed.

Door dimensions should be 8′ 0″ wide by 7′ 0″ in height.

CONSTRUCTION

Walls of garages should be built of concrete, hollow tile, brick or other approved incombustible material; or they should be built with 4-inch studs, filled solidly with brickwork laid in mortar or other incombustible material faced with metal lath and ¾″ cement plaster. Door from garage to house should be metal-covered on side toward garage, same to be of galvanized iron ranging from 18 to 26 gauge or 16 to 32 oz. copper, and same to be painted in color to contrast with wall.

Ceiling over garage shall be covered with metal lath and at least ¾″ coat of cement or gypsum plaster;* or by a ½″ layer of asbestos board covered with a ¼″ layer of plaster or with a layer of sheet metal.

Floors laid on the ground shall have a leveling fill of 6″ composed of crushed stone, cinders or gravel, well tamped and leveled to receive 4″ of concrete with a 1:2:4 mix (Portland cement, clean sharp sand and trap rock or gravel to pass a 1½-inch ring). Concrete floor to be finished with 1″ of cement mortar, consisting of one part cement and two parts sand, and troweled to an even, dense surface. The concrete base and surface to pitch to drain with 1 inch fall to every six feet.

MECHANICAL EQUIPMENT

Heating: hot water or steam with line run from house boiler. Radiation should be computed so as to provide 60° temperature with thermostatic control to operate drafts of furnace should the temperature drop below 35°. Both electric and coal burning heaters are available for the detached garage.

Ventilation: provide louvered metal ventilators on side of wall of garage, 2′ 0″ above floor level. Louvers of vent should be opened automatically when garage is entered.

OTHER ELEMENTS

Drain: a heavy service cast iron drain with brass strainer of approved make should be installed in concrete floor connected to sewer system.

Water: spigot placed convenient to head of car fitted with sufficient length of linen hose.

Shelves: for storage of tools, grease gun, oil and cleaning equipment.

Color: walls painted millwhite to reflect light. Face of curb at entrance in black and white diagonal stripes. Inside entrance door to house to be painted black or gray.

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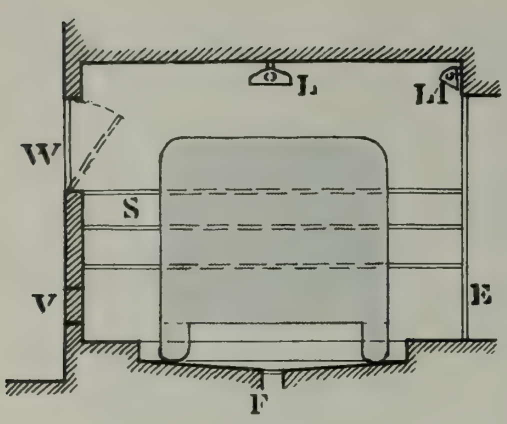
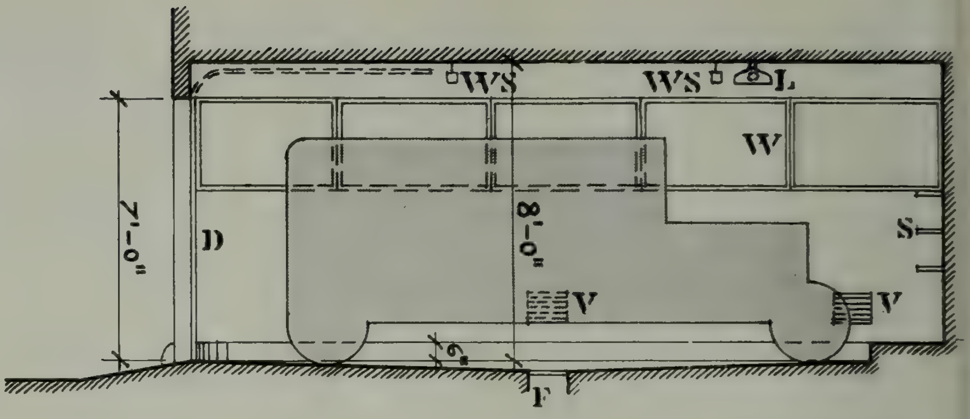
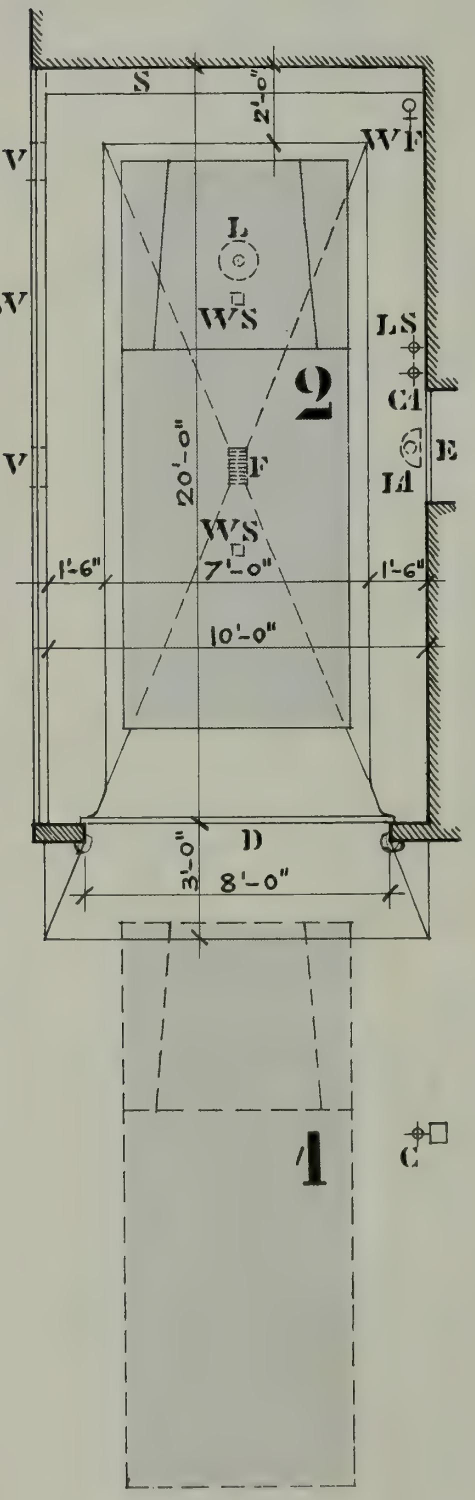
*Full listing of Motor Car Dimensions for 1931 may be obtained from Automobile Chamber of Commerce, 366 Madison Avenue, N. Y. C.

*Cement plaster is preferred, both as a fire-resistant and as protection against corrosion when metal lath is used.





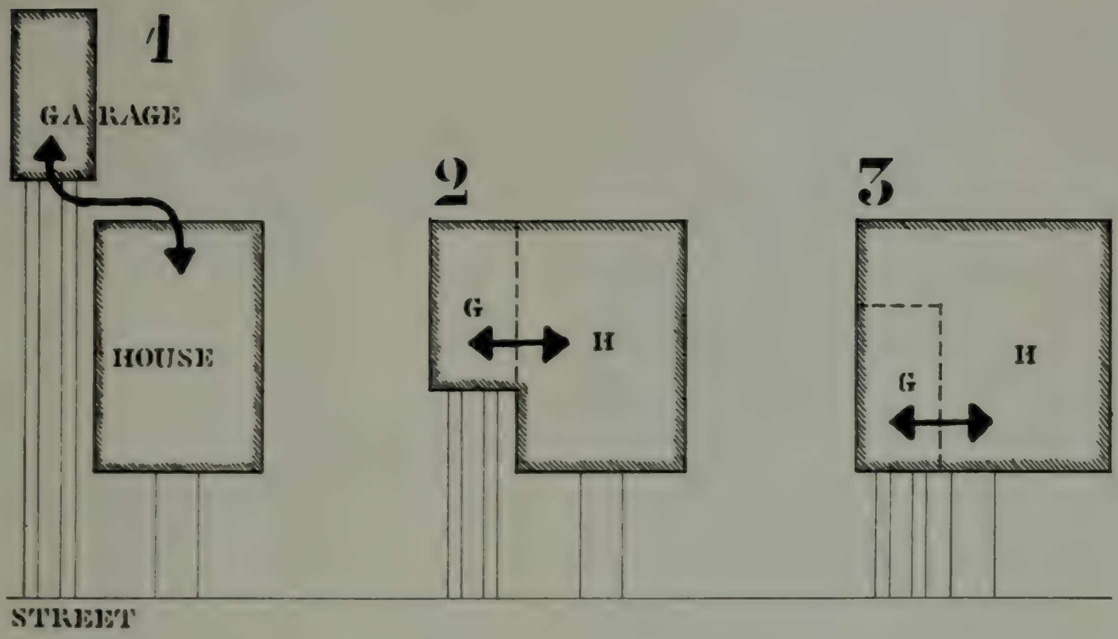


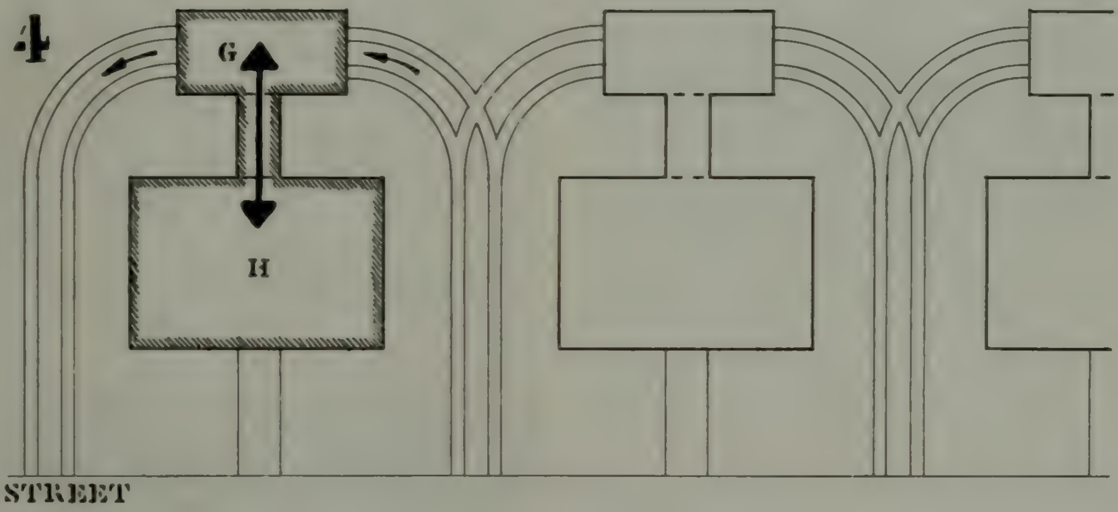
TYPICAL GARAGE LAYOUT

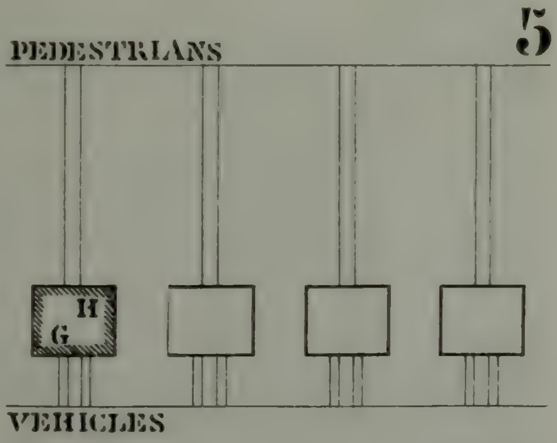
(1 car)

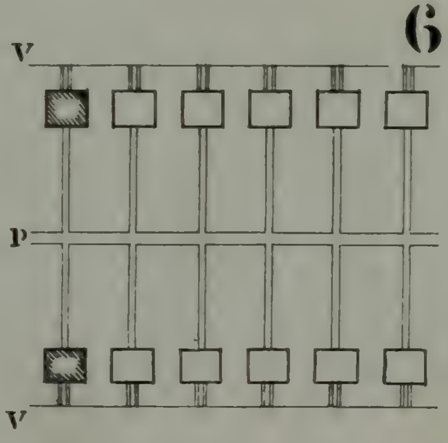
Key to Indication on Plan and Sections

1	Car shown on plan before entering garage in position to operate control switch C.
2	Car inside garage.
C	Control switch operated by driver to open, close and lock garage doors without leaving car.
C 1	Control switch for same purpose inside garage.
D	Garage doors (overhead)
E	Entrance door to house (metal clad).
F	Floor drain at center of garage.
L	Ceiling reflector over engine.
L 1	Light at house entrance, directed on running board.
L s	Light switches.
S	Shelving for storage of supplies.
V	Vents near base of wall.
W	Windows hinged at bottom.
W s	Sprinkler system for fire protection.









1. Detached garage, an arrangement suggested by the stable which was separated from house for sanitary reasons.
2. Same garage unit attached to house in order to attain convenience of entry. There is no valid reason as in case of stable to separate the two elements.
3. Final step in evolution. The garage is here incorporated in house plan and is most directly accessible from entrance hallway and from street.
4. An arrangement with garage at rear making available entire house frontage for living rooms. Cars may drive into and out of garage instead of backing out to street. One driveway serves two garages.

5, 6. A desirable separation of pedestrians and vehicles with grouped houses. Garage entrances face highways. Hall entries for pedestrians and the living rooms front gardens.

Washroom: adjacent to entrance of house from garage. Equipment: toilet seat, wash basin, mirror, paper towel rack, waste towel holder, soap container, closet for clothes storage, and hangers.

Apron to be of concrete (see construction of floors), same to extend 1 foot at each side beyond the door opening.

Lighting: ceiling light near end of garage over front end of motor car, equipped with dome type reflector so as to thoroughly illuminate engine (60-watt lamp). Wall light at entrance to garage from house for single car garage, with angle reflector to direct light on running board. Control of lights should be from house entrance hall and at main door entrance.

Power connection at wall over work bench or adjacent to entrance door from house (see plans).

Windows at side of garage afford better lighting of garage interior than glazed doors because daylight from side windows illuminates the length of car rather than the rear. Windows should be placed near to ceiling and should extend the entire garage length. They should be hinged at bottom to open in.

Overhead car washer to be installed on ceiling at place determined by location of cars; the washer to be equipped with an automatic cut-off so as to permit the regulation of the water supply. (Some models are made with an electric light attachment for the hose arm, and with special clamps, socket and reflector.)

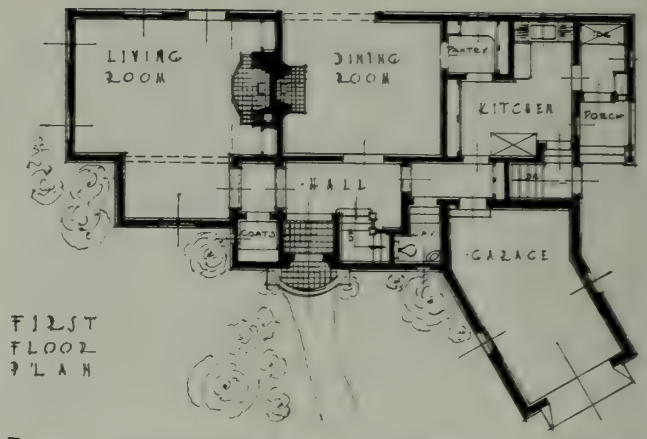
Door Opening Devices:

1. The General Power Door Unit, operated by electricity, opens, closes and locks the garage doors (General Power Door Company, St. Cloud, Minn.). It can be installed on almost any kind of garage door. The usual installation carries a three-station control system—a push button within the garage, one within the house and one at the key-lock switch outside the garage.

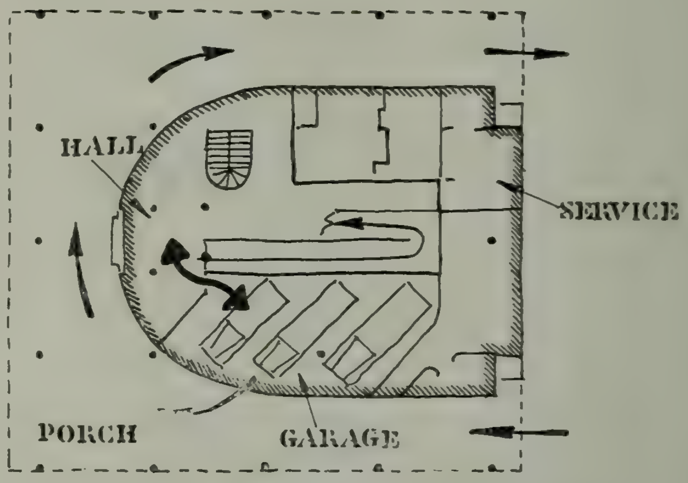
2. With radio control (Barber-Coleman Company, Rockford, Ill.), the driver of a car about to enter the garage can open doors and light the garage lights by simply pulling a knob on the instrument board. For full details see Architectural Record, December, 1930, p. 480.

Sprinklers: provide an approved automatic sprinkler system so constructed as to protect every square foot of floor area. Each sprinkler head to protect not in excess of 100 square feet area.

A. Lawrence Kocher
and Albert Frey



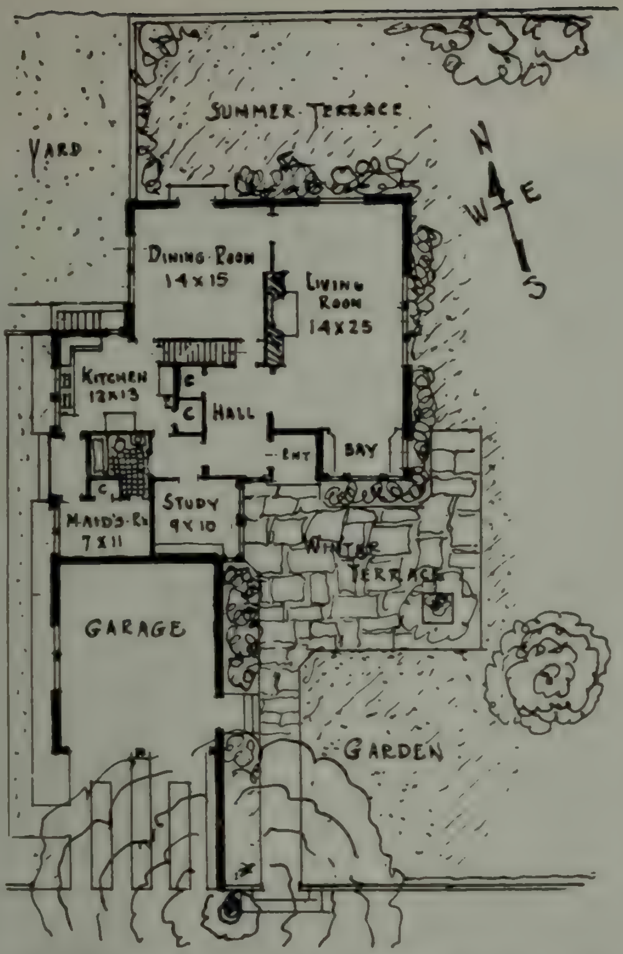
Direct communication with garage from hall. The lavatory and coat room are convenient for entrance from garage and at front door entrance to house.
MERTON E. GRANGER, ARCHITECT



An arrangement of garage, hall and service on ground level. There is a continuous drive around these enclosed rooms. The upper floors with living rooms form a shelter over the drive and entrances.
LE CORBUSIER AND P. JEANNERET, ARCHITECTS

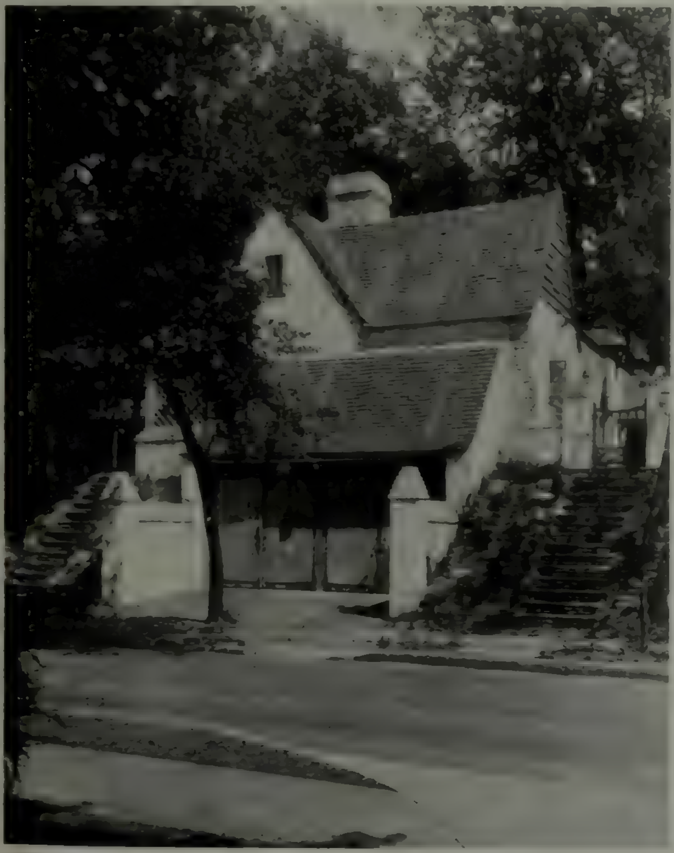
Mott Studios

Garage with door opening units (posts with key-lock switch) electrically opening, closing and locking garage doors without leaving car.
ARTHUR B. ZWEBELL, DESIGNER

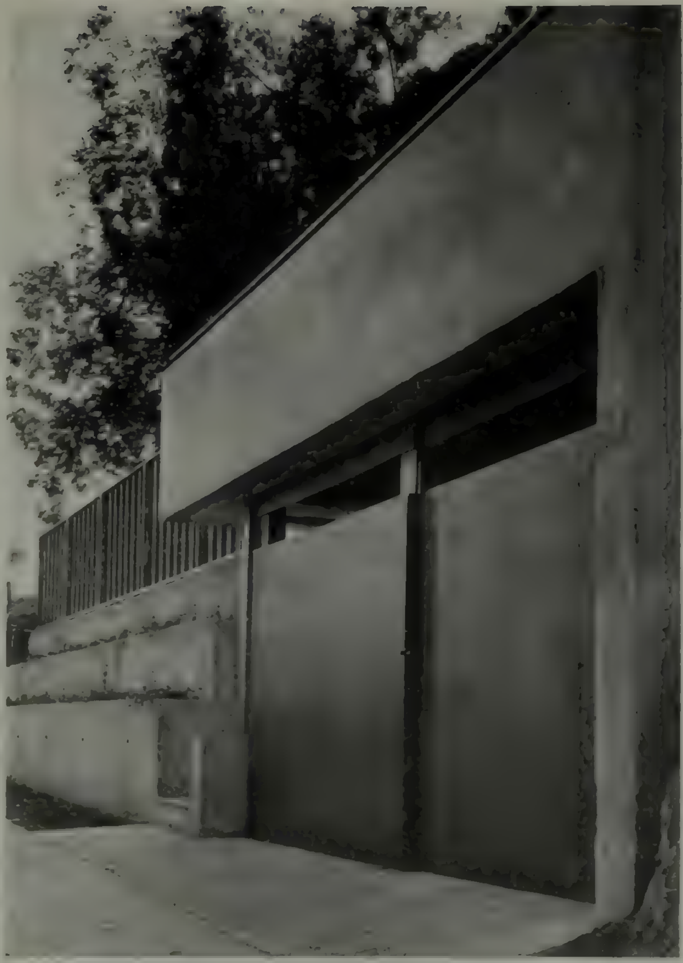


Garage entrance screened from front garden by wall. Entrance to house from garage is by unsheltered path.

R. C. WEINBERG, ARCHITECT



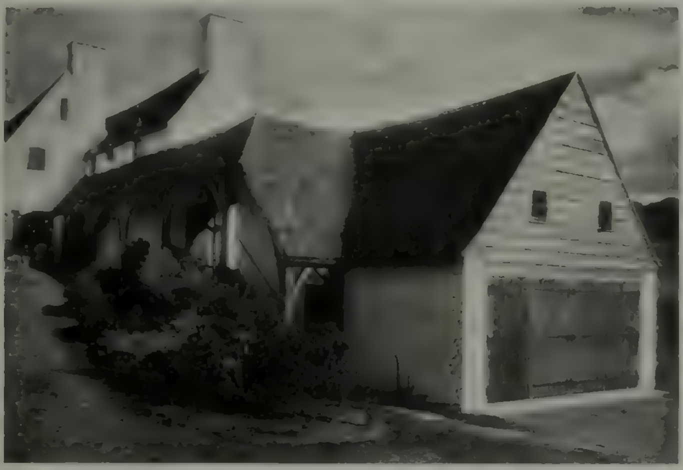
Gillies



Morga

Garage at driveway level below the first floor, a solution imposed by the steep slope of site. An exposed stairway parallels the garage to upper level.

STUDIO OF CONRAD BUFF, LOS ANGELES
RICHARD J. NEUTRA, ARCHITECT



Gillies

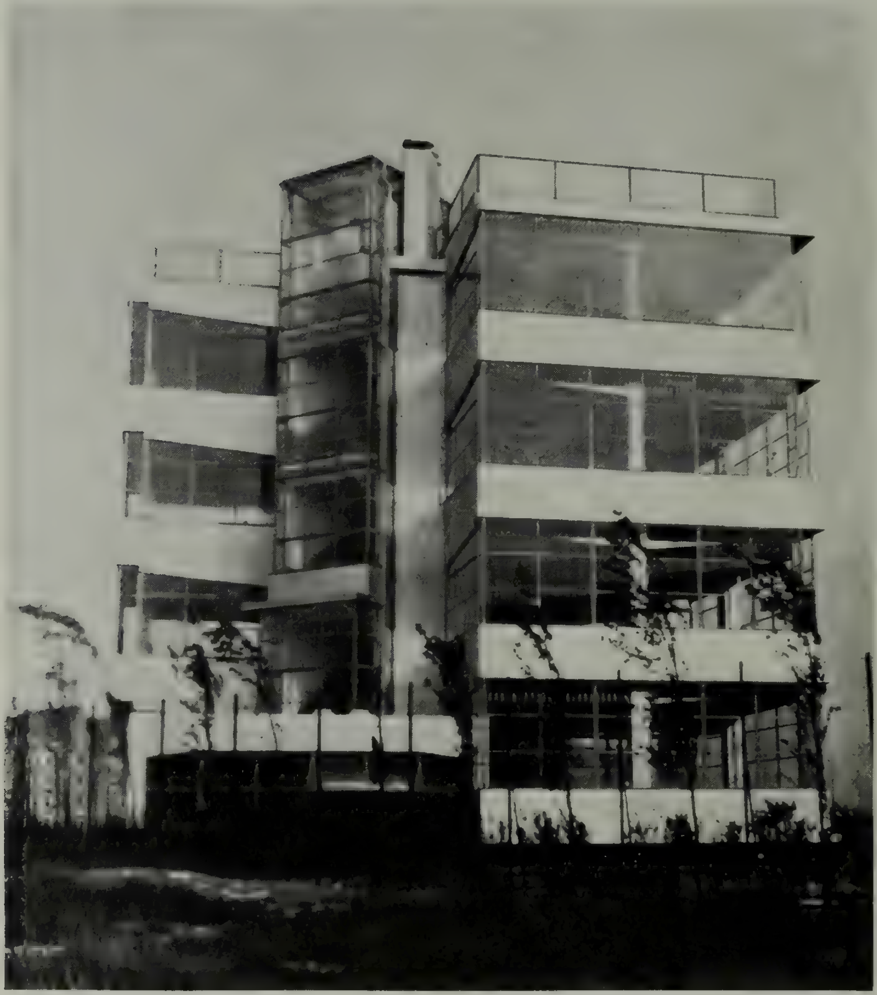
Garage attached to house at lower level.

HOUSE OF HARRY LOGAN, WARREN, PA.
FRANK J. FORSTER, ARCHITECT

← **Garage near street for house on small site with slope to rear. Stairways for service and to main house are at limits of property.**

HOUSE OF EDWARD C. DUBEL, FOREST HILLS, L. I.
FRANK J. FORSTER, ARCHITECT

AN OPEN-AIR SCHOOL IN HOLLAND

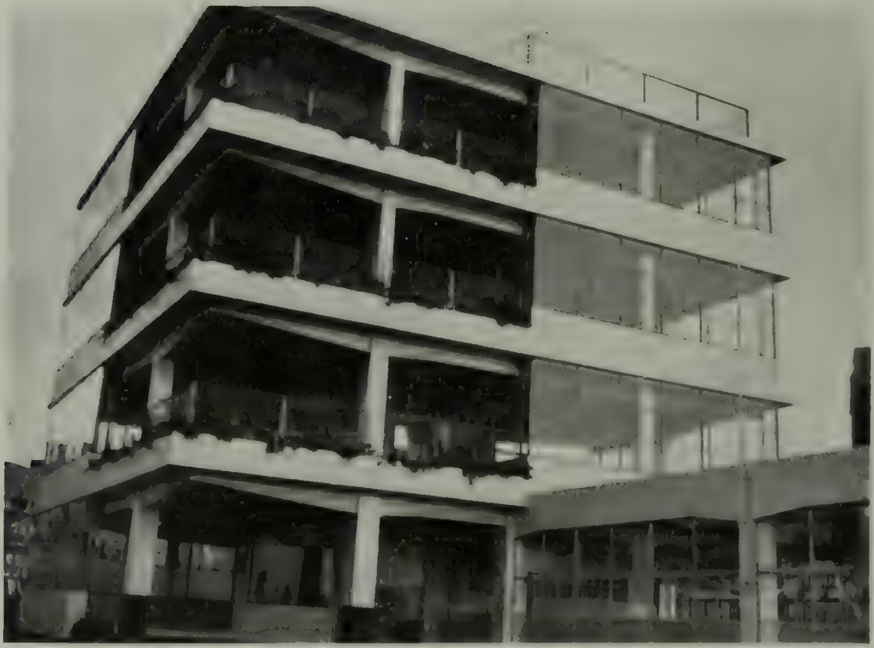


Windows, which can be opened or closed according to the weather, form the three outside walls of each classroom in this new school in Amsterdam. Open roofed balconies are attached to the outer walls. The fourth and inner wall of each classroom faces a stairway, and has built-in shelves and washstand and movable blackboards.

Below the roof is a central heating system. A system of pipes warms floors and ceilings. There are no heating tubes exposed in the classrooms.

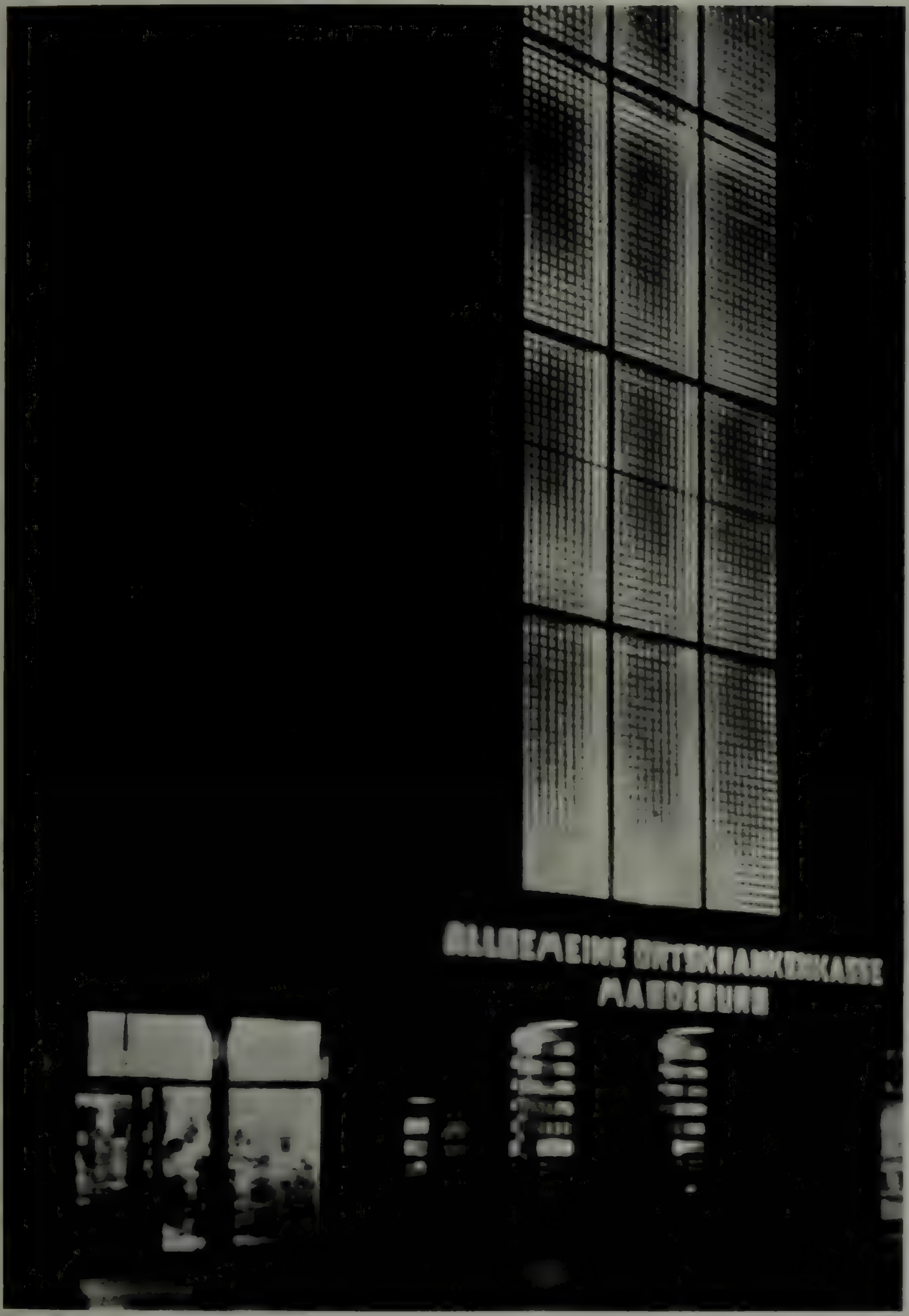
On the ground floor is a gymnasium, also enclosed by glass walls.

The school was built not for children suffering from sickness but for normal healthy children between the ages of six and twelve.



Photographs by
M. L. JORGENSON

LUXFER GLASS PRISM CONSTRUCTIONS*



Korn. Glas im Bau

BANK IN MAGDEBURG. WORM AND KRAYL, ARCHITECTS

THE GLASS UNITS

Pressed glass tiles in sizes from 10 to 17 cm. with prismatic, diamond or modeled surfaces designed for diffusion and controlled refraction of exterior light or for diffused reflection of interior light to avoid the usual black appearance of flat glass at night. The tiles are made of clear, reinforced or colored glass of high strength and great heat resistance.

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* The German *Luxfer* glass constructions are based on designs by the American architect, F. L. Keppler, president of *Relief Glass Construction*, New York, and former owner and present American representative for *Deutsche Luxfer Prismen Gesellschaft*.

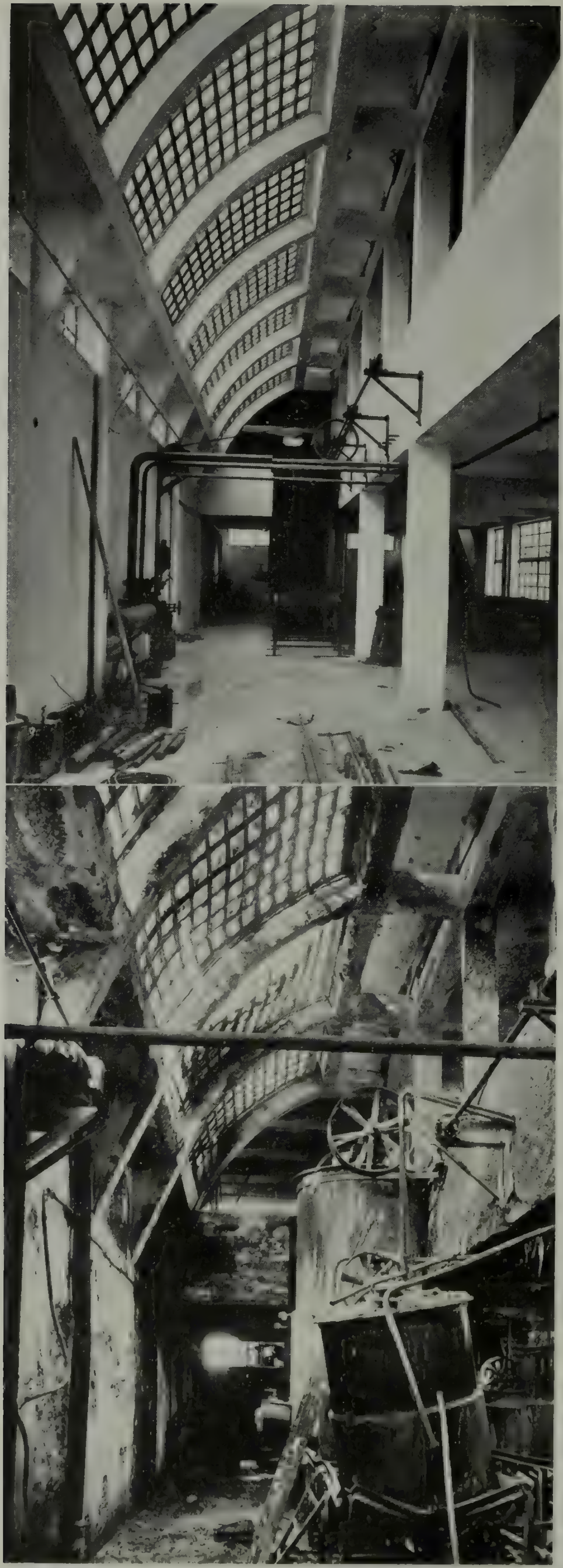


FIG. 1

CURVED LUXFER ROOF CONSTRUCTION FOR OIL REFINERY BEFORE AND AFTER A FIRE. THE TILES BROKE IN THE INTENSE HEAT FROM THE BURNING OIL BUT DID NOT FALL OUT OF THE FRAMES.

GLASS CONCRETE CONSTRUCTIONS

Glass units embedded in slender ribs of reinforced concrete. The glass is an integral part of the construction.

ROOF CONSTRUCTION

Figs. 1, 2, 3

Precast panels or field construction with metal forms. Broken or damaged glass units are exchanged easily without injuring the supporting framework. Condensation is greatly reduced. High bearing capacity. Used for roofs and interior floors. Special tiles for roof construction are provided with an edge groove in which bitumen plaster of about 5 mm. thickness is laid sealing the vertical joints between the glass and the concrete and haircracks in the concrete to prevent corrosion of the reinforcing.

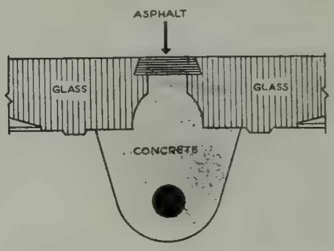


FIG. 2

LUXFER ROOF CONSTRUCTION SHOWING INSULATION OF JOINTS.

WALL CONSTRUCTION

Figs. 4, 5

Tiles consisting of two superimposed parts sealed together, forming a cavity for air. Broken units are easily exchanged without damaging the other part of the tile or of the adjoining units. The flanges of the tiles are designed to refract the light, which is stopped by the muntins in the usual window constructions. The single parts of the tiles can expand independently of each other, eliminating internal stresses when exposed to fire. The exterior smooth surfaces are cleaned easily. Low maintenance cost. Used for exterior and interior walls and partitions. Maximum size of panels 35 to 40 square feet. Precast in shop or built in field. Cost about $4 per square foot.

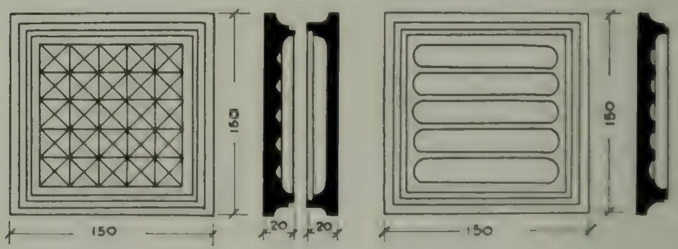


FIG. 4

TILES FOR LUXFER WALL CONSTRUCTION. DIMENSIONS IN MILLIMETERS.

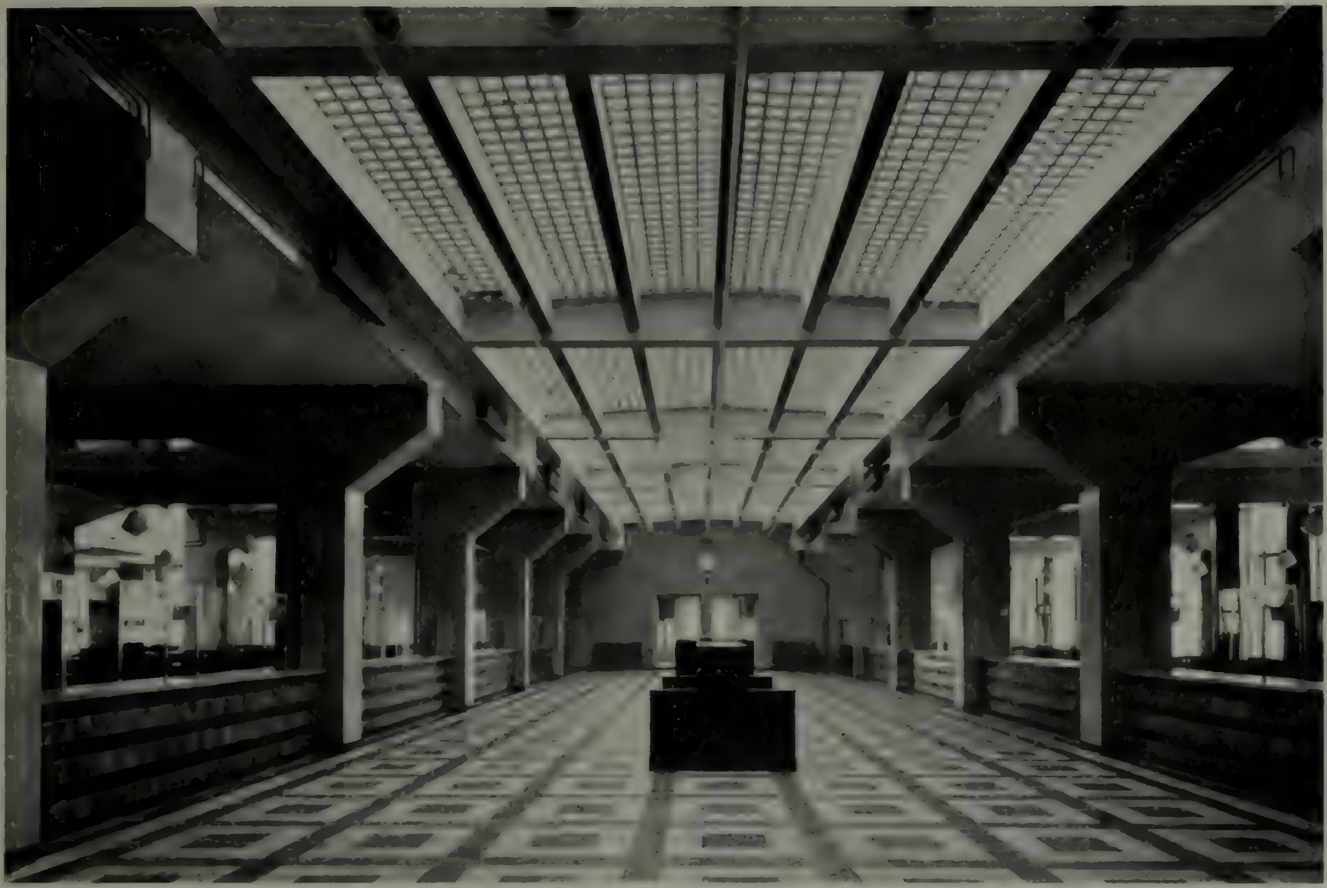


FIG. 3

LUXFER ROOF CONSTRUCTION FOR BANK IN MAGDEBURG. WORM AND KRAYL, ARCHITECTS

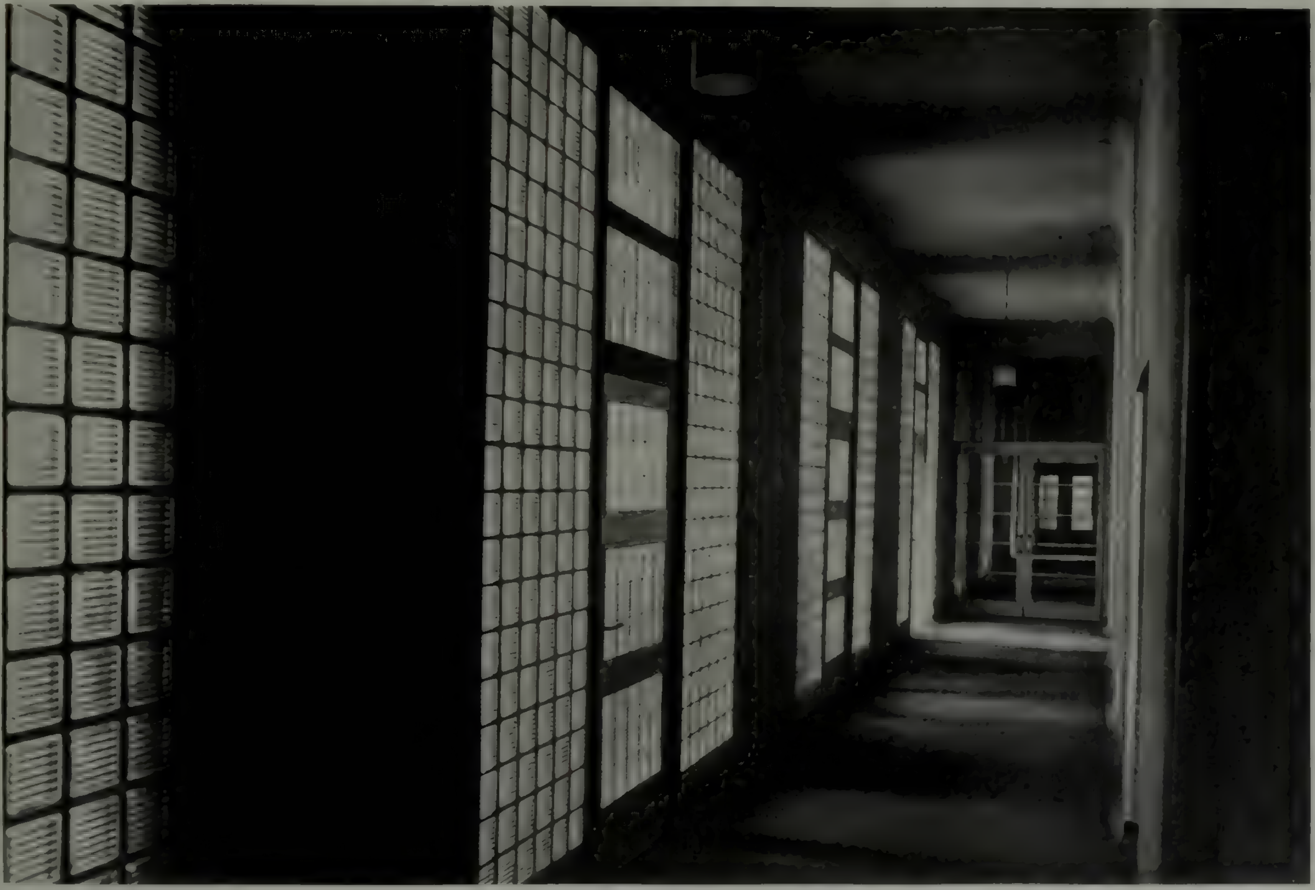


FIG. 5

LUXFER WALL CONSTRUCTION FOR HOSPITAL IN POTSDAM. MOHR, ARCHITECT

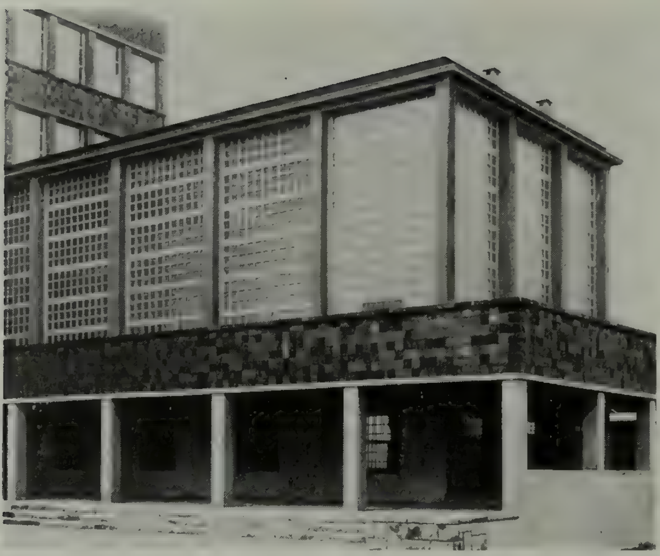


FIG. 6

LUXFER CONCRETE FRAME WINDOWS. RESEARCH LABORATORY, DORTMUND.

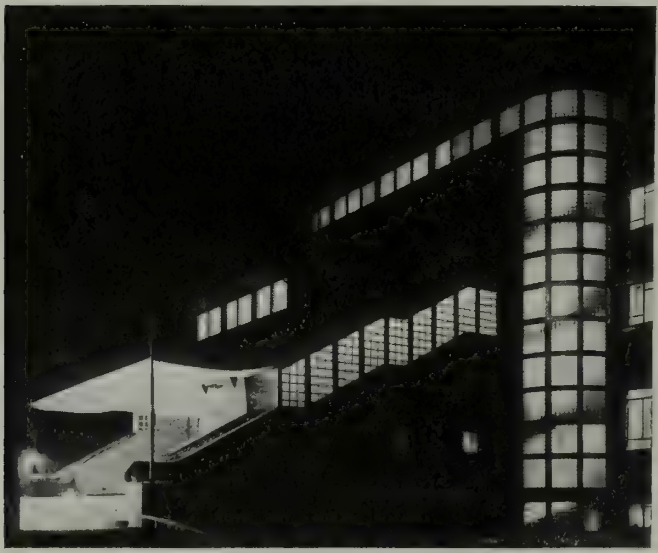


FIG. 7

LUXFER CONCRETE FRAME WINDOWS. AIRPORT IN HAMBURG. DYRSSEN AND AVERHOFF, ARCHITECTS.

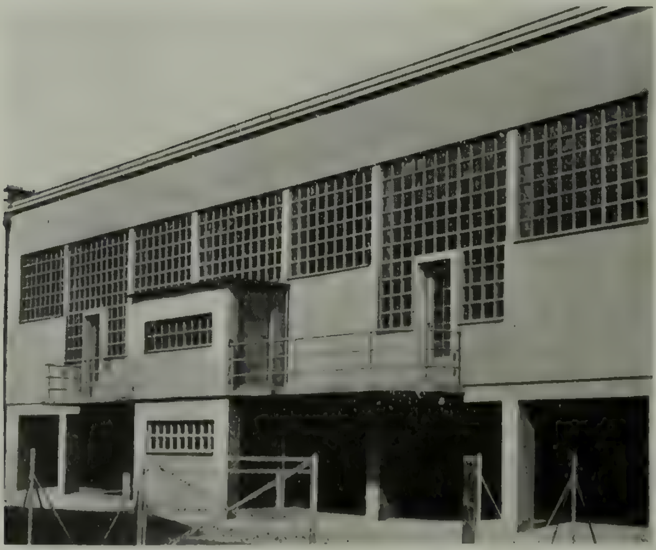


FIG. 8

LUXFER CONCRETE FRAME WINDOWS. TRANSFORMER STATION, PFALZ.

ELECTROLYTICALLY FRAMED TILES

The tiles can be fastened electrolytically in copper muntins. The glass units are placed in a network of copper strips in an electrolytical bath. By this process the tiles are sealed tightly by the metal. The overall width of the finished muntin is about ⅛ inch. The panels are made in sizes up to 16 square feet and are then fastened in metal frames with loose joints allowing for expansion in case of fire. This construction is used for walls, ceilings, roofs, store fronts and lighting fixtures. On account of its high fire-resistant property it has been used for fire curtains in department stores.

CONCRETE FRAME WINDOW UNITS

Figs. 6, 7, 8, 9

Machine-made concrete frames of standardized dimensions placed together and joined with cement mortar. Openings over 40 square feet are reinforced with rods embedded in the joints. The frames can be made for single or double glazing with ordinary sheet glass or for prismatic or diamond *Luxfer* glass tiles. Special putty is used for the glazing. Metal ventilators can be placed in the frames where desired. The construction requires no painting. The panels are fireproof and of low heat transmission compared with steel sash. The construction can be erected with unskilled labor. The maintenance cost is low.

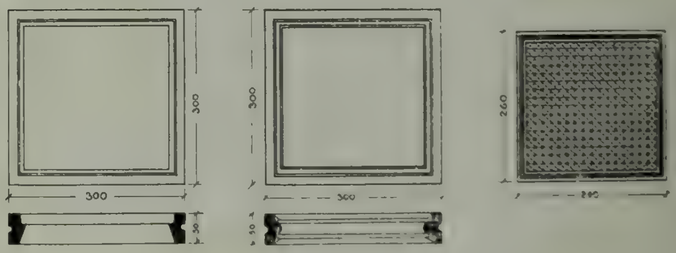


FIG. 9

LUXFER CONCRETE FRAME WINDOWS FOR SINGLE AND DOUBLE GLAZING AND FOR LUXFER TILES. DIMENSIONS IN MILLIMETER.

REFERENCES

Glas in der Architectur der Gegenwart, by K. W. Schulze, Wissenschaftlicher Verlag Dr. Zaugg & Co., Stuttgart, 1929.

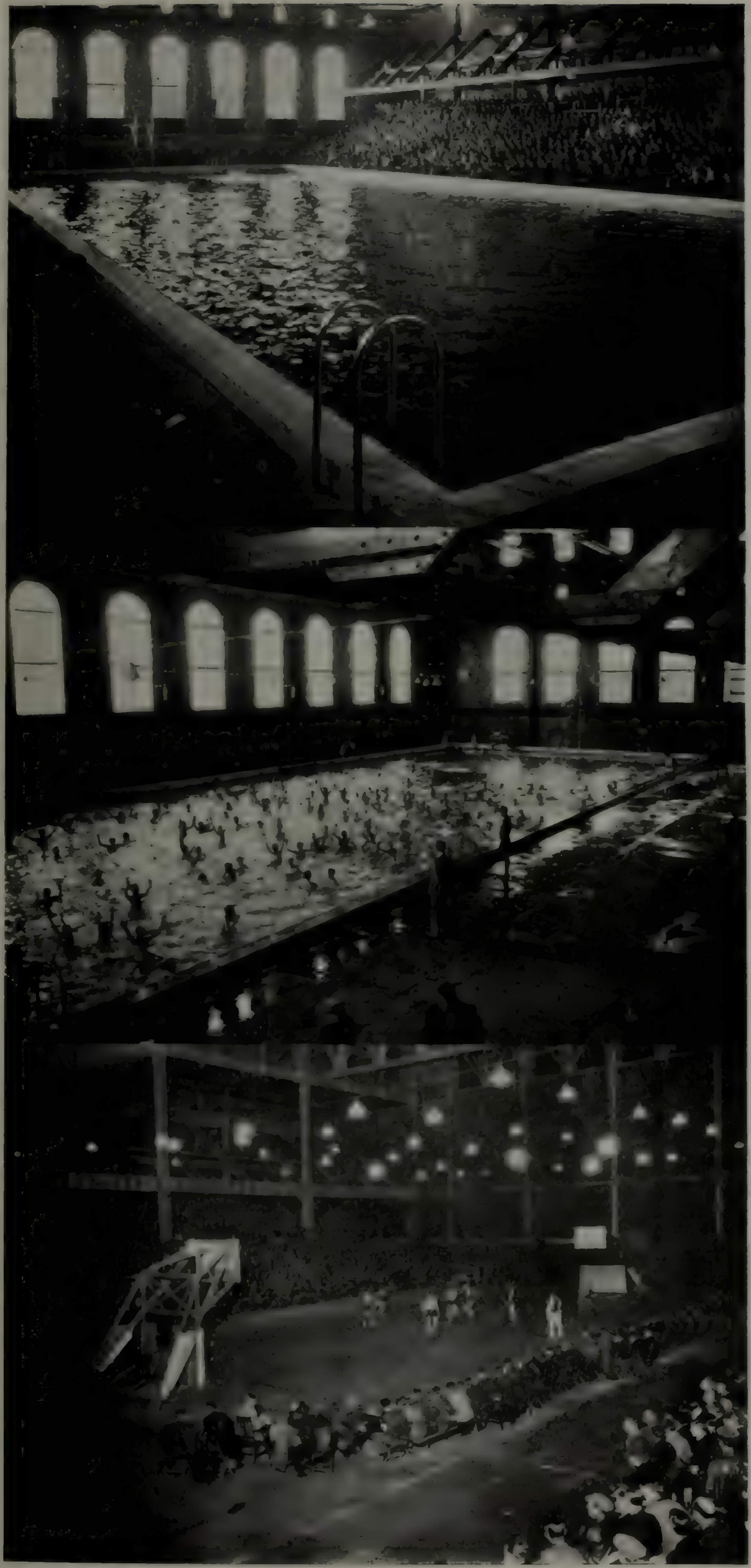
Glas im Bau und als Gebrauchsgegenstand, by Arthur Korn, Ernst Pollak Verlag, Berlin-Charlottenburg.

Physical Properties of Glass, The Architectural Record, October, 1930.

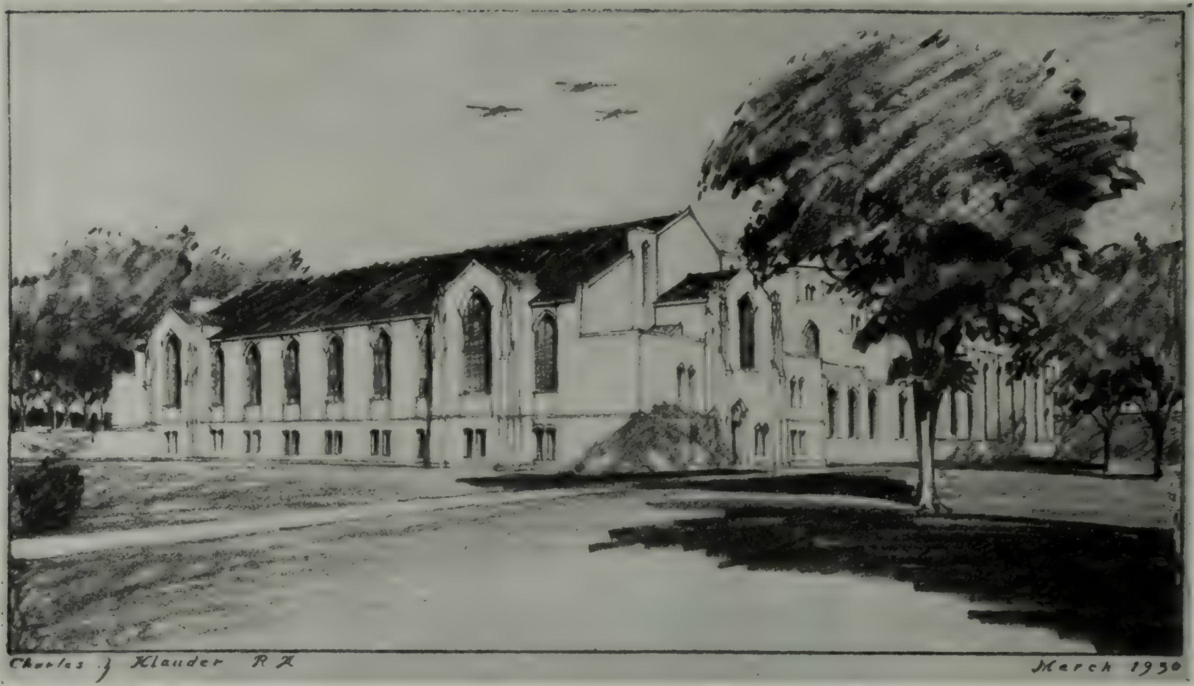
TECHNICAL NEWS AND RESEARCH

GYMNASIUM PLANNING

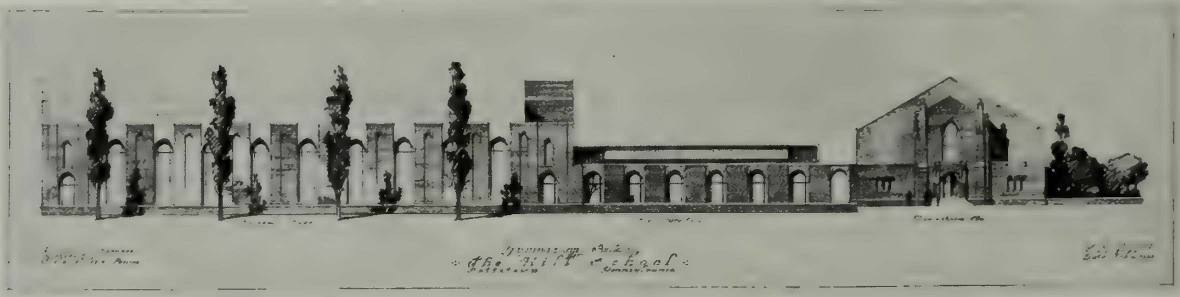
By
ROBERT L. DAVISON



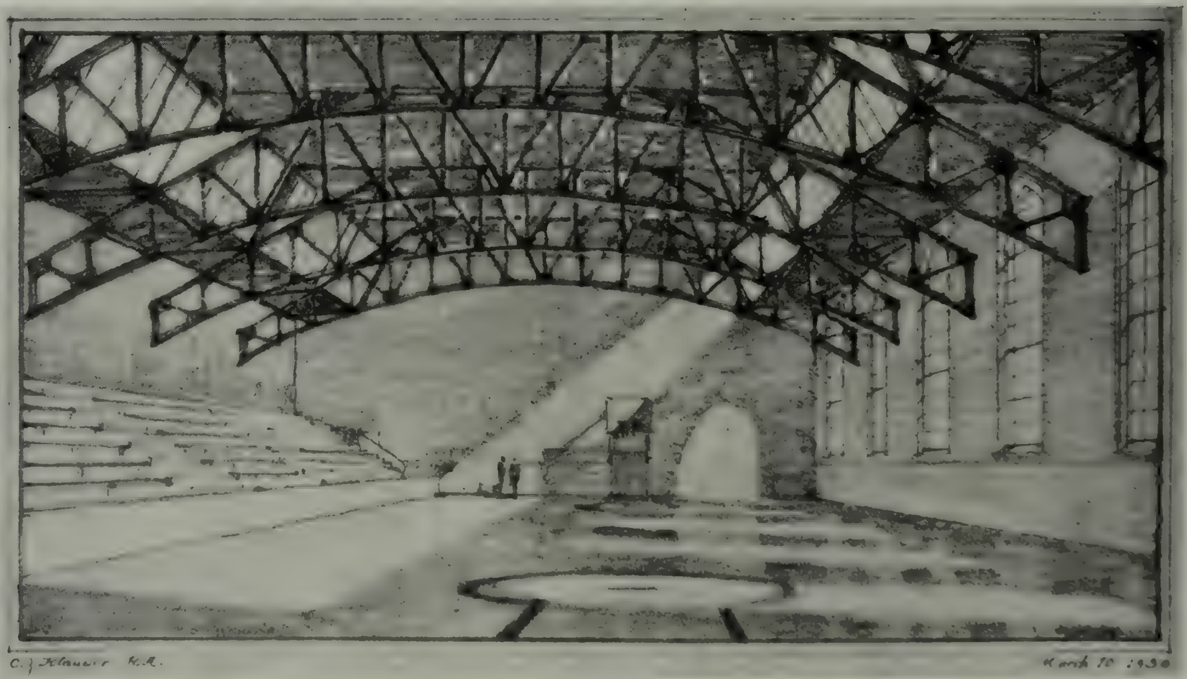
GYMNASIUM AND FIELD HOUSE
IOWA STATE UNIVERSITY
PROUDFOOT, RAWSON, SOUERS
AND THOMAS, ARCHITECTS



Exterior of gymnasium building.



See plans on page 86.



Basketball room.

THE HILL SCHOOL
POTTSTOWN, PENNSYLVANIA
CHARLES Z. KLAUDER, ARCHITECT

GYMNASIUM PLANNING*

The design of a gymnasium involves first of all a clear definition of its functions, which in time must be translated into an equally definite statement of physical requirements.

A questionnaire in the form of a table should be prepared by the architect and submitted to the athletic or physical education department or building committee with the request that it be used as a checklist to aid them in expressing an opinion as to what facilities the structure should contain, physical requirements to be met, the number of persons who would use these different facilities, and so forth. The accompanying questionnaire, prepared by Frederick L. Ackerman as an aid in the preparation of the plan for the Cornell gymnasium, gives a good idea of what a questionnaire for a college gymnasium building should cover. The same method can be modified to meet other types of gymnasium buildings.

The facilities to be included must not only be such as to serve future needs, but must also, except in rare instances, be so chosen that a structure of minimum or mean volume will provide facilities for something like a maximum number. To illustrate: some indoor games and activities require about twenty-five times as much volume per man as others, so that the typical problem in its broad outlines is obviously that of providing, within a reasonable volume of structure, for such diversified activities as will engage the interest of the maximum number of students.

"In the selection of facilities we must be guided, to some extent, by local habits. But there are certain general considerations that obtain in any case. Some students will respond only to the prospect of participating in intramural or intercollegiate athletics; others will be interested only in games and casual play; still others will engage in physical exercise only under organized guidance and in calisthenics, and the like, so that diversity with respect to facilities is not merely diversity with respect to games; it is *diversity with respect to types of activities*—calisthenics, organized recreation, casual play." (1)**

DESIRABLE GYMNASIUM FACILITIES

The accompanying list of facilities, in order of rating, as prepared by the Committee on Construction and Material Equipment of the Society of Directors of Physical Education in Colleges, will also aid the architect in preparation of a questionnaire or checklist for submittal to his building committee.

GYMNASIUM CHECKING LIST

Listed in order of importance. (From report of Committee on Construction and Material Equipment, 1).

I. **MAIN FLOOR**

1. Basketball court
2. Physical education class floor
3. Bleacher space†
4. Visitors' gallery
5. Running track
6. Dance floor
7. Banquet facilities
8. Stage

The tendency among the above units is toward less consideration for use of the floor for dancing, banquets and stage facilities.

II. **SWIMMING POOL**

1. Pool proper
2. Heating unit
3. Filtration plant
4. Diving equipment
5. Bleacher space
6. Visitors' gallery

III. **LOCKER ROOMS**

1. Main (general)
2. Home team
3. Visiting team
4. Officials
5. Corrective, faculty

Contrary to the above table the tendency in the larger institutions is to rate the corrective locker room above the officials' locker room.

IV. **SHOWERS**

1. Main (general)
2. Team room
3. Staff
4. Faculty
5. Officials

Of the auxiliary shower units those for the team room and staff are the most desirable.

---

*We wish to acknowledge the kind assistance of the following:
Mr. Frederick L. Ackerman, architect.
Dr. N. L. Engelhardt, Teachers' College, Columbia University.
Thomas, Martin and Kirkpatrick, architects.
Mr. Arthur Winters, Department of Physical Education, Hamilton College, New York.
Mr. R. L. Rayburn, Assistant Director of the Architectural Bureau of the Y. M. C. A.
Miss Lena Farrar, City Secretary of the National Board of the Y. W. C. A.

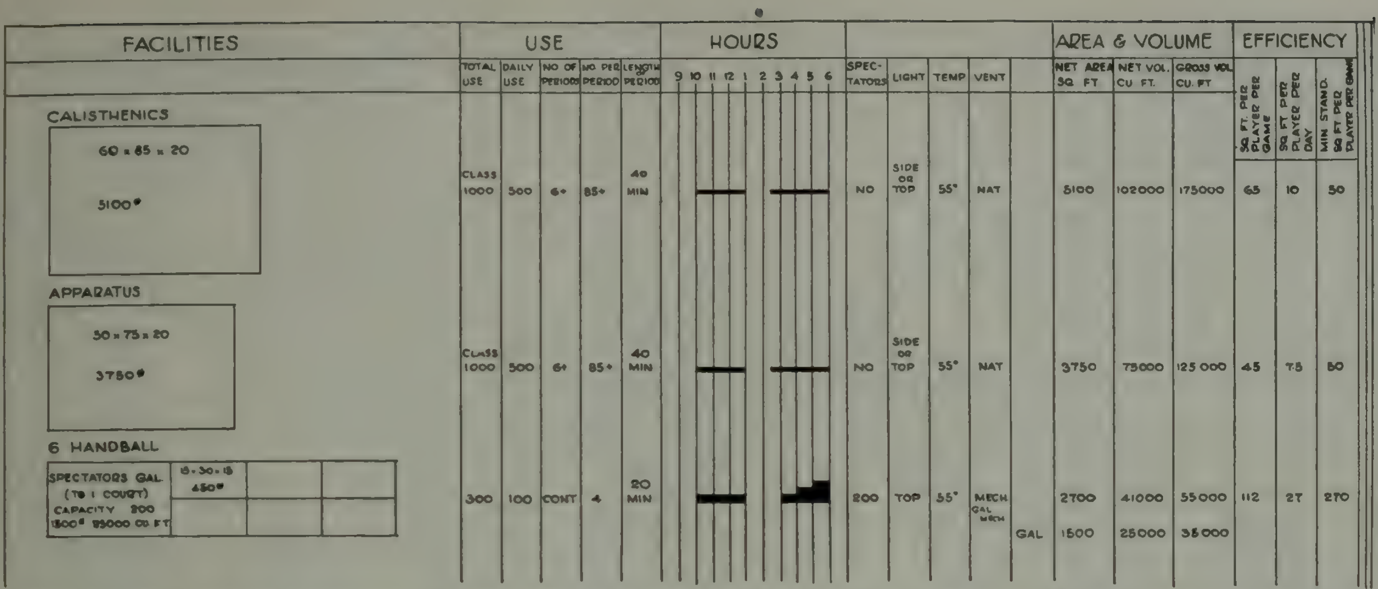
**See references on page 90.

†The recent survey conducted by Arthur R. Winters, Dept. of Physical Education of Hamilton College, shows that bleacher space is ranked ahead of physical education needs on gymnasium floor.

DIAGRAMMATIC PROGRAM SHOWING SIZE, USE, AND MAINTENANCE OF GYMNASIUM FACILITIES *

FACILITIES	USE					HOURS		AREA AND					VOLUME			EFFICIENCY		
	Total Use	Daily Use	No. of Periods	No. per Period,	Length of Period	A. M.	P. M.	Spectators	Light	Temperature	Ventilation		Net Area Sq. Ft.	Net Volume Cu. Ft.	Gross Volume Cu. Ft.	Sq. ft. per player per game	Sq. ft. per player per day	Min. Standard sq. ft. per player per game
Calisthenics 60x85x20 5100 sq. ft.	Class 1000	500	6+	85+	40 Min.	10-1	2:30-6	No	Side or Top	55°	Nat.		5100	102000	175000	60	10	50
Apparatus 50x75x20 3750 sq. ft.	Class 1000	500	6+	85+	40 Min.	10-1	2:30-6	No	Side or Top	55°	Nat.		3750	75000	125000	45	7.5	50
Rowing Machines 50x60x20 3000 sq. ft.	Class 500	400	Cont.	38			2-6	No	Side or Top	55°	Nat.		3000	60000	85000	80	7.5	80
Rowing Tank 50x60x20 3000 sq. ft.	Class 200	100	Cont.				2-6	No	Side or Top	55°	Nat.		3000	60000	100000		30	
Two Volley Ball Courts 30x50x20 1500 sq. ft.	Game 200	100	Cont.	20	45 Min.		4-6 3-6	No	Top				3000	60000	85000	75	30	75
Five Basketball Courts 45x75x22 3375 sq. ft.	Game 1000	500	Cont.	10	1 Hr.	10-1	5-6 4-6 2:30-6	500	Top	55°	Nat. and Mech.		16875	370000	530000	337	34	3000
One Basketball Spectator Gallery, 500 Cap. 3500 sq. ft. 70,000 cu. ft.												Gal.	3570	70000	100000			
Six Handball Courts 30x40x20 1200 sq. ft.	Game 300	100	Cont.	4	30 Min.	10-1	5-6 4-6 3-6	200	Top	55°	Nat. and Mech.		7200	144000	190000	300	72	300
Six Handball Courts 15x30x15 450 sq. ft.	300	100	Cont.	4	20 Min.	10-1	5-6 4-6 3-6	200	Top	55°	Mech.		2700	41000	55000	112	27	270
One Handball Court Spectator Gallery, 200 Capacity, 1500 sq. ft., 25000 cu. ft.												Gal.	1500	25000	35000			
Pole Vaulting, Jumping, etc. 3 strips 12x120x20 4300 sq. ft. 3 strips, 12x45x20, 1620 sq. ft.	200	100	Cont.	14		10-1	5-6 4-6 3-6	No	Side or Top	55°	Nat.		5940	119000	150000 (—)	400	59	400
Tennis, Indoor Soccer, Hockey 50x120x25 1620 sq. ft.	200	40	Cont.			10-1	5-6 4-6 3-6	500	Top	55°	Nat.		6000	150000	225000		150	Tennis 1800 Hockey 1000
One Tennis Spectator Gallery, 500 capacity 3500 sq. ft., 90000 cu. ft.												Gal.	3500	90000	110000			
Fencing 40x45x15, 1800 sq. ft.	100	50	Cont.	10		10-1	5-6 4-6 3-6	No	Side or Top	55°	Nat.		1800	27000	40000	180	36	200
Wrestling 40x60x20, 2400 sq. ft.	250	100	Cont.	12			4-6 3-6 2-6	No	Side or Top	55°	Nat.		2400	48000	60000 (—)	200	24	200
Boxing 40x50x15 2000 sq. ft.	250	100	Cont.	10			5-6 4-6 3-6 2-6	No	Side Side Top	55°	Nat.		2000	30000	45000	200	20	200
Swimming Pool 35x75 5500 sq. ft.	3000	300	Cont.			12-1	4-5 3-5 2-5	1500	Top and Side	72° to 75°	Mech.		5500	200000	300000		18	
Swimming Pool Spectator Gallery. Cap. 1500 10500 sq. ft. 260000 cu. ft.												Gal.	10500	260000	300000			
Swimming Pool 15x75 3000 sq. ft.	1000	200	Cont.				2-5	No	Side or Top	72° to 75°	Mech.		3000	90000	120000		15	
Corrective Gymnasium 30x40x20 1200 sq. ft.	300	150	Cont.	25					Side or Top	60° to 65°	Nat.		1200	24000	32000			
Indoor Golf 20x20x15 400 sq. ft.	100	25	Cont.	2					Side or Top	60° to 65°	Nat.		400	6000	8000			
Lecture Room 35x40x15 1400 sq. ft.	200								Side or Top	68°	Mech.		1400	21000	30000			
Medical Examination Room 60x260x15 15600 sq. ft.									Side and Top				15000	234000	300000			
Faculty Gymnasium 45x75x20 3375 sq. ft.									Side or Top	55°	Nat.		3375	68000	90000			
Three Thousand Lockers 160x100 16000 sq. ft.									Side or Top	65°	Mech.		16000	200000	275000			
200 Faculty Lockers 28x50 1400 sq. ft.									Side or Top	65°	Mech.		1400	17000	22000			
Sixty Showers 40x50 2000 sq. ft.										72° to 75°	Mech.		2000	35000	45000			
Ten-Lap Outdoor Track (8 to 10) Approx. 100x225. 10-12 ft. wide																		
Indoor Track 12 to 16 laps 6 to 9 ft. wide										68°					100000			
Toilets																		

* From Research Quarterly, 1930, The Society of Directors of Physical Education in Colleges.



FACILITIES	USE: TOTAL USE	USE: DAILY USE	USE: NO OF PERIODS	USE: NO PER PERIOD	USE: LENGTH OF PERIOD	HOURS 9 10 11 12 1 2 3 4 5 6	SPECTATORS	LIGHT	TEMP	VENT		AREA & VOLUME: NET AREA SQ FT	AREA & VOLUME: NET VOL. CU FT.	AREA & VOLUME: GROSS VOL CU. FT	EFFICIENCY: SQ FT. PER PLAYER PER GAME	EFFICIENCY: SQ FT PER PLAYER PER DAY	EFFICIENCY: MIN STAND. SQ FT PER PLAYER PER GAME
CALISTHENICS 60 x 85 x 20 5100#	CLASS 1000	500	6+	85+	40 MIN		NO	SIDE OR TOP	55°	NAT		5100	102000	175000	65	10	50
APPARATUS 50 x 75 x 20 3750#	CLASS 1000	500	6+	85+	40 MIN		NO	SIDE OR TOP	55°	NAT		3750	75000	125 000	45	7.5	50
6 HANDBALL SPECTATORS GAL. (TO 1 COURT) CAPACITY 200 1500# 25000 CU FT 15 x 30 x 15 450#	300	100	CONT	4	20 MIN		200	TOP	55°	MECH GAL MECH		2700	41000	55000	112	27	270
											GAL	1500	25000	35000			

TABULATION OF REQUIREMENTS OF VARIOUS ATHLETIC ACTIVITIES AS BASIS FOR GYMNASIUM DESIGN.

Prepared by Frederick L. Ackerman, architect, for Cornell University Gymnasium. (See pages 68, 70 and 71 for plans and elevation.)

V. **GENERAL**

1. Office
2. Physical examination room
3. Lecture room
4. Ladies' room
5. Conference room
6. Reception room
7. Trophy room
8. Library

There is a distinct tendency to favor the first four units above the latter four.

VI. **SEPARATE EXERCISE AND ACTIVITY UNITS**

1. Handball courts
2. Corrective exercise room
3. Wrestling room
4. Small gymnasium
5. Boxing room
6. Baseball cage
7. Squash courts
8. Fencing room
9. Faculty gymnasium

Recommendations for the future show an appreciable gain in the desirability of squash, fencing, and small gymnasium facilities, and in that order. Indoor cage facilities were the only units to show a decrease in relative value.

VII. **SUPPLEMENTARY ROOMS**

1. Stock room
2. Trainer's room
3. Janitor's room
4. Bleacher storage
5. Drying room
6. Apparatus storage
7. Machine and repair room
8. Laundry

There is no indication of change in the order of desirability of these units.

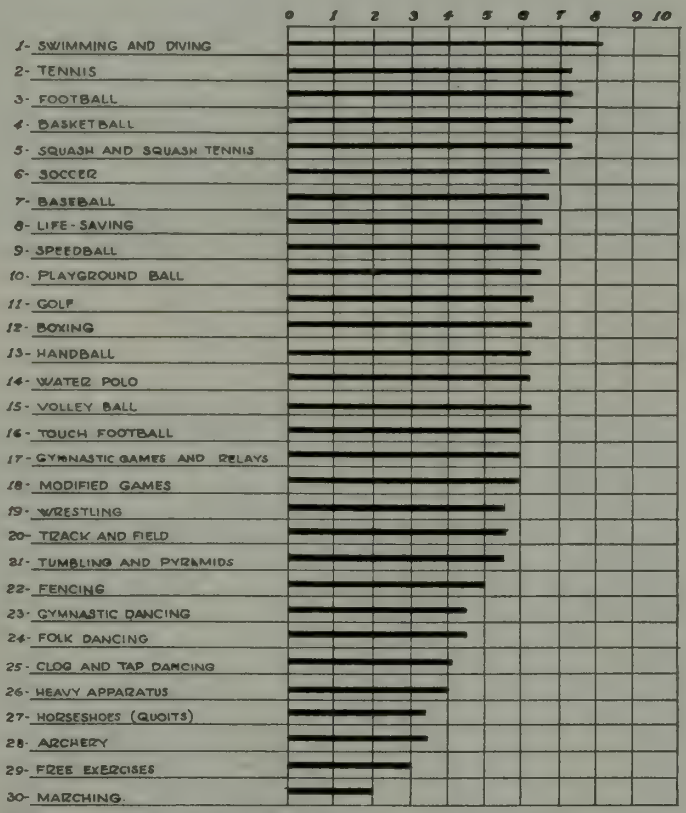


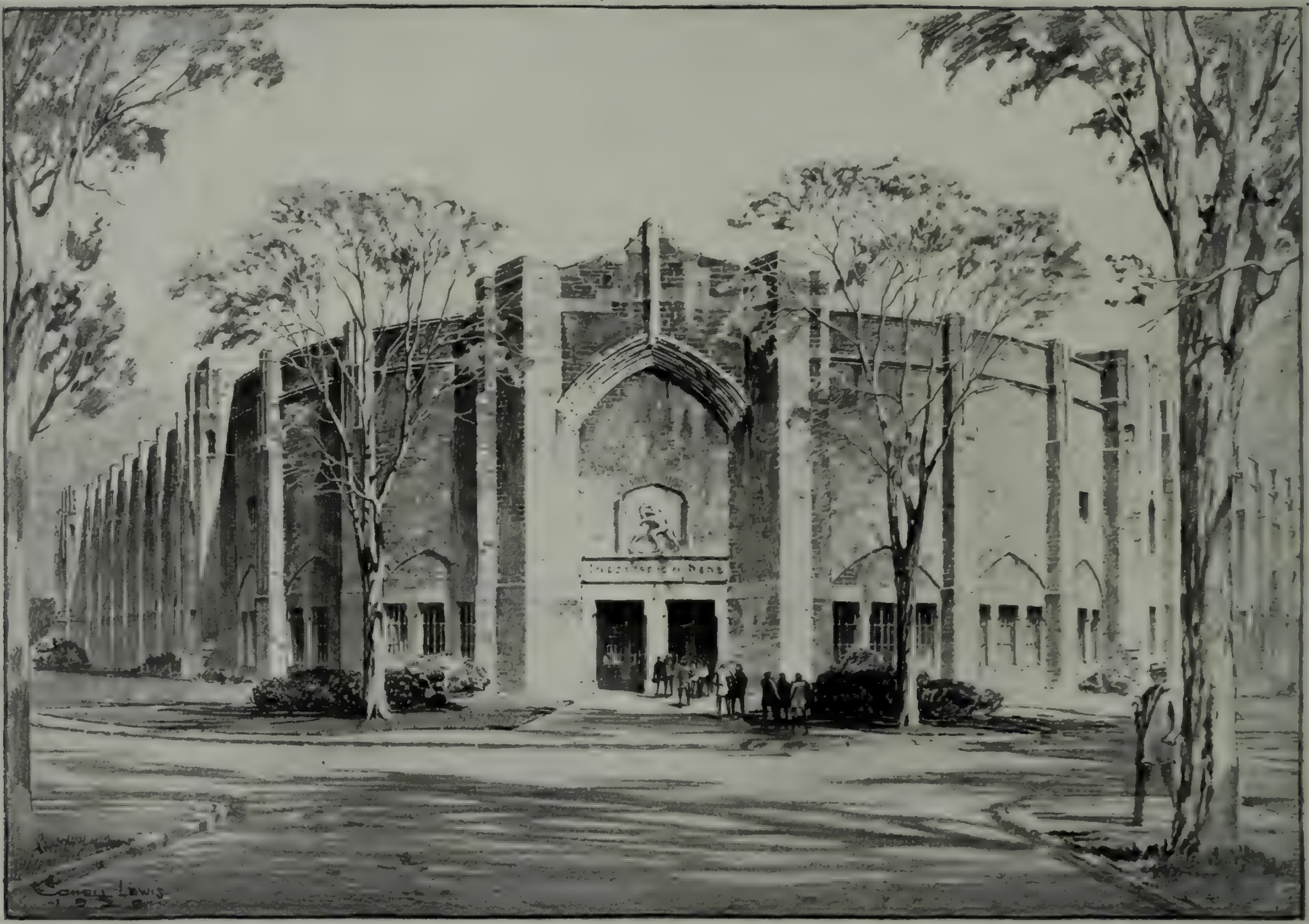
CHART SHOWING THE RELATIVE "ALL-ROUND" VALUE OF VARIOUS SPORTS. (11)

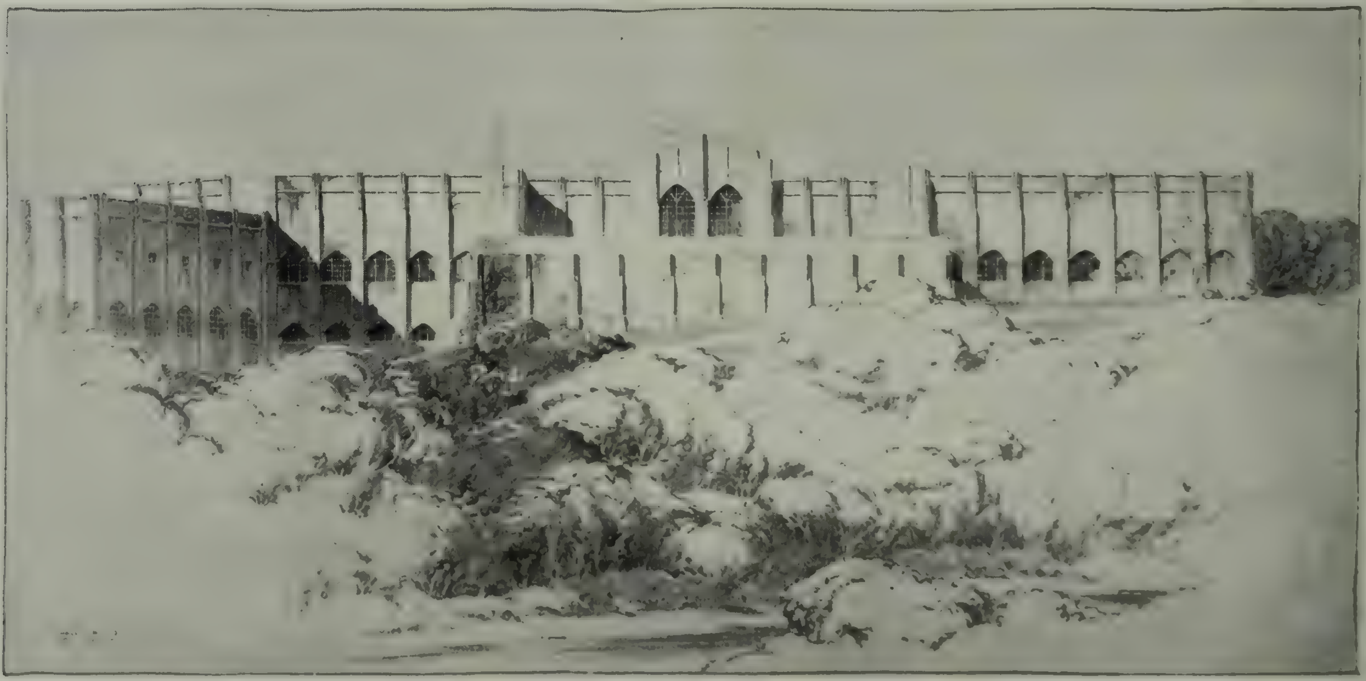
SPECIFIC REQUIREMENTS DETERMINED BY QUESTIONNAIRE

After having obtained a tabular statement of the wishes of the athletic authorities or building committee, the architect will find the design problems simplified if he will analyze such requirements as will condition definitely the arrangement of the plan.

Dual purpose limits gymnasium design

Where a gymnasium has to serve several functions, such as use for an assembly hall or stage, etc., these





PROPOSED GYMNASIUM
CORNELL UNIVERSITY, ITHACA, NEW YORK
FREDERICK L. ACKERMAN, ARCHITECT

See "Tabulation of Requirements of Various Athletic Activities," pages 66 and 67.

functions will outweigh frequently some of the requirements of the physical education program. When compromise is required, it will be advisable for the architect and building committee to weigh from the assembled data at an early period the relative importance of the various functions to be demanded of the combined gymnasium and to decide on the particular form of compromise to be adopted.

The gymnasium and auditorium may be combined in one of two ways:

(1) The stage floor may be made of ample width and depth so as to allow its use either as an ordinary stage or closed off from the auditorium and used as a gymnasium.

(2) The auditorium floor when cleared of collapsible chairs may be utilized as the gymnasium floor. In this case, a small stage is placed at one end or side of the auditorium.

Although a few years ago this dual use was accepted as the ultimate in gymnasium planning for schools, it is not generally advisable to plan for dual use because of the desirability of using both gymnasium and auditorium for a large part of the school day.

Natural light requirements limit height

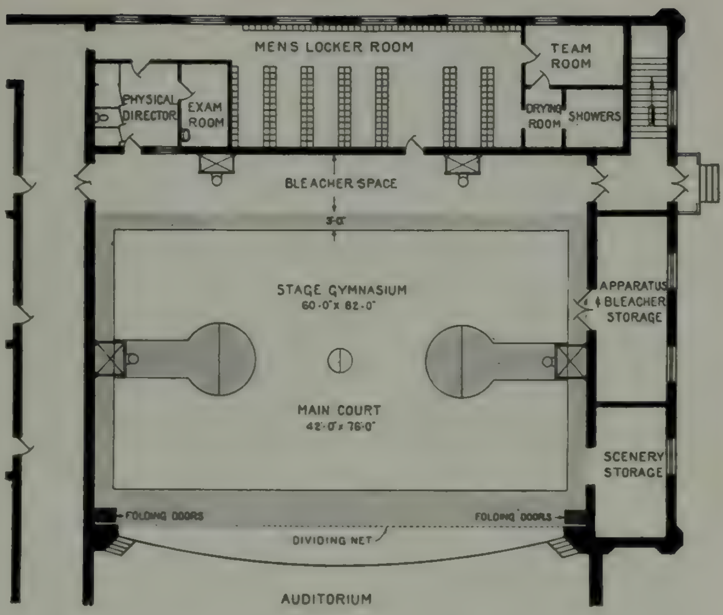
Referring to the table used by Mr. Ackerman in designing the Cornell gymnasium, one sees that certain activities and certain rooms require varying amounts of top lighting, whereas other rooms are served equally well with light from top or sides and in a few cases from the end of the room. This factor not only establishes the location or design of individual rooms, but since the table shows that fully half the rooms should have top light, it eliminates a three-story building (in this case) as a desirable solution unless land costs are a primary factor.

For the basketball court and general-purpose gymnasium room "natural lighting is preferred on the two long sides of the room with a minimum of light at ends. Special care should be taken to protect basketball players against end lighting. Overhead lighting in the gymnasium is the least desirable method of natural lighting." (5)

Natural ventilation requirements limit form

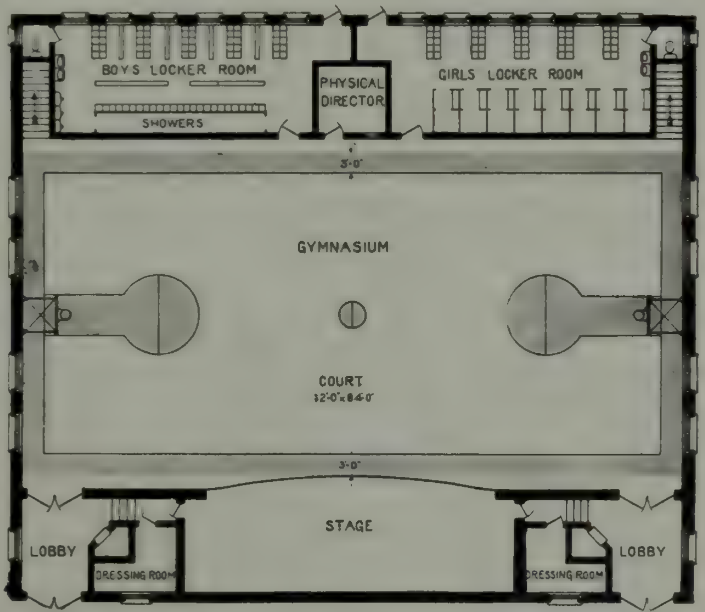
The adequate natural ventilation of rooms of the shape, area and volume given in Mr. Ackerman's table requires the provision of windows in the two side walls.

To permit adequate ventilation "except in the case of rooms that are to be provided with mechanical ventilation, the rooms should be ranged in wings with low corridors along the side so as to allow windows above. Second-floor rooms should be approached by stairs so placed, with reference to a pair of rooms, that second-floor corridors may be reduced to a minimum." (1)



The stage floor is made of ample width and depth to allow its use either as an ordinary stage or as a gymnasium when closed off from the auditorium by folding doors.

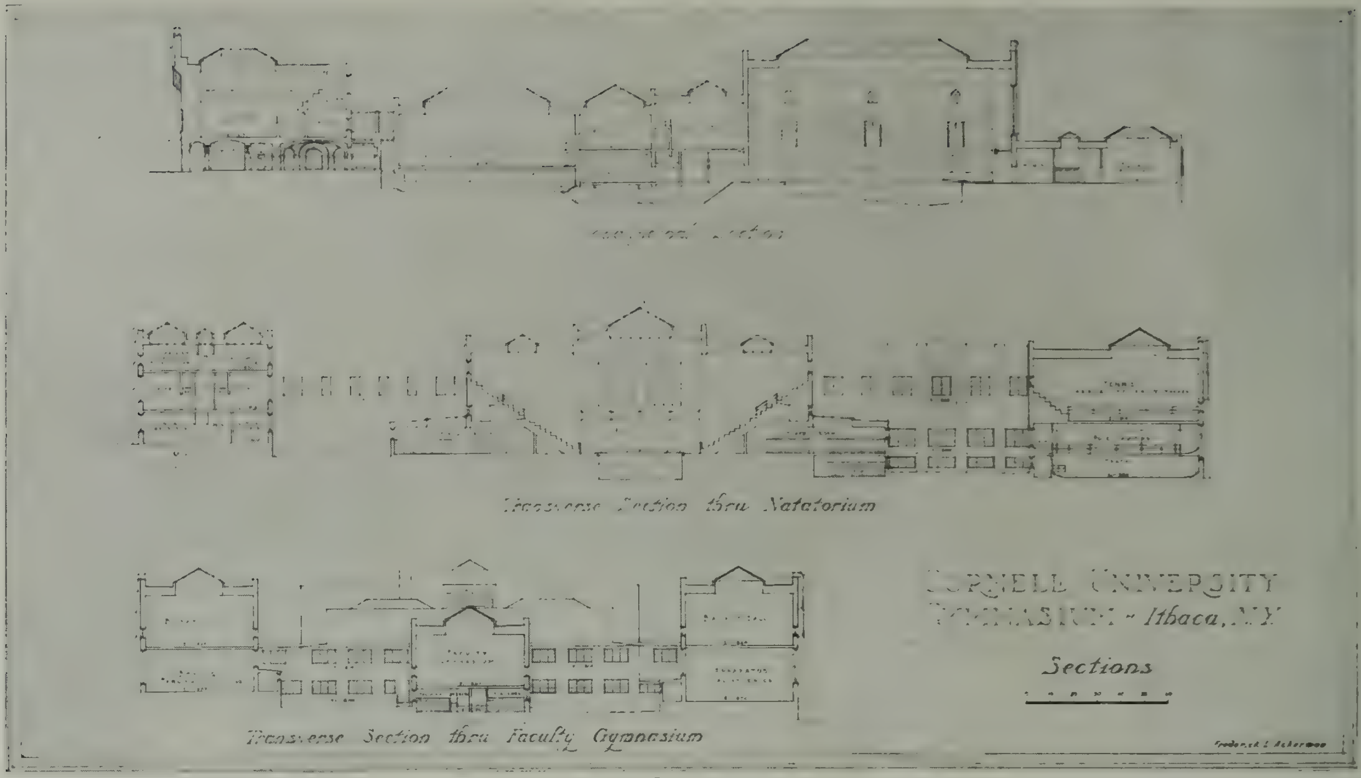
This is no longer considered good practice because of the desirability of the independent use of both gymnasium and auditorium for the larger part of the day.



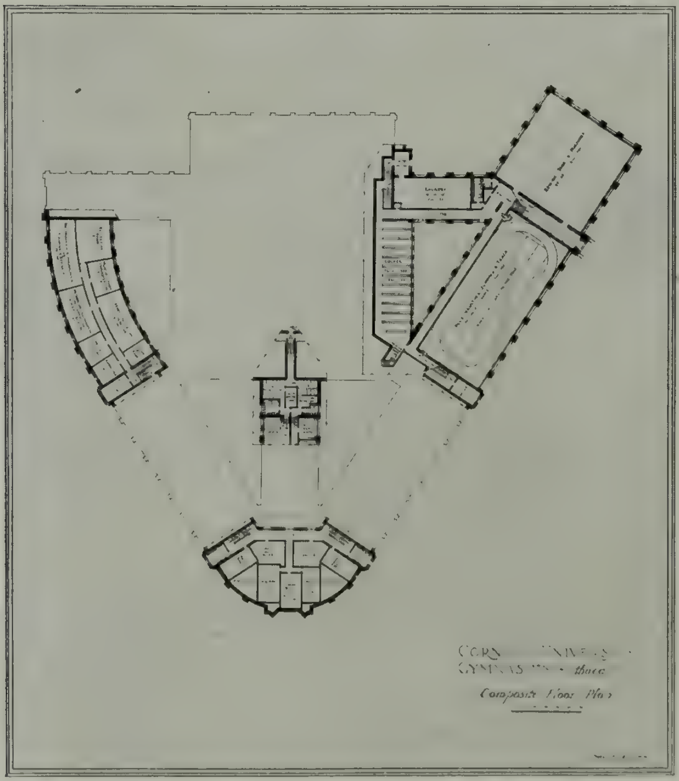
By the use of chairs the gymnasium can be readily converted into an auditorium.

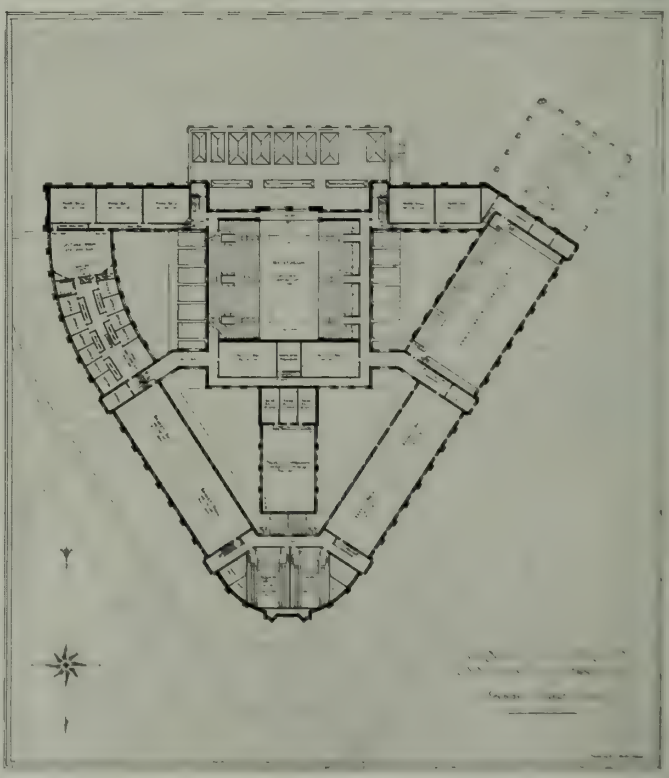
This double use is never very satisfactory but may be employed when funds are limited.

Plans from "Medart Gymnasium Equipment."


Transverse Section thru Natatorium
Transverse Section thru Faculty Gymnasium
CORNELL UNIVERSITY
GYMNASIUM - Ithaca, N.Y.
Sections

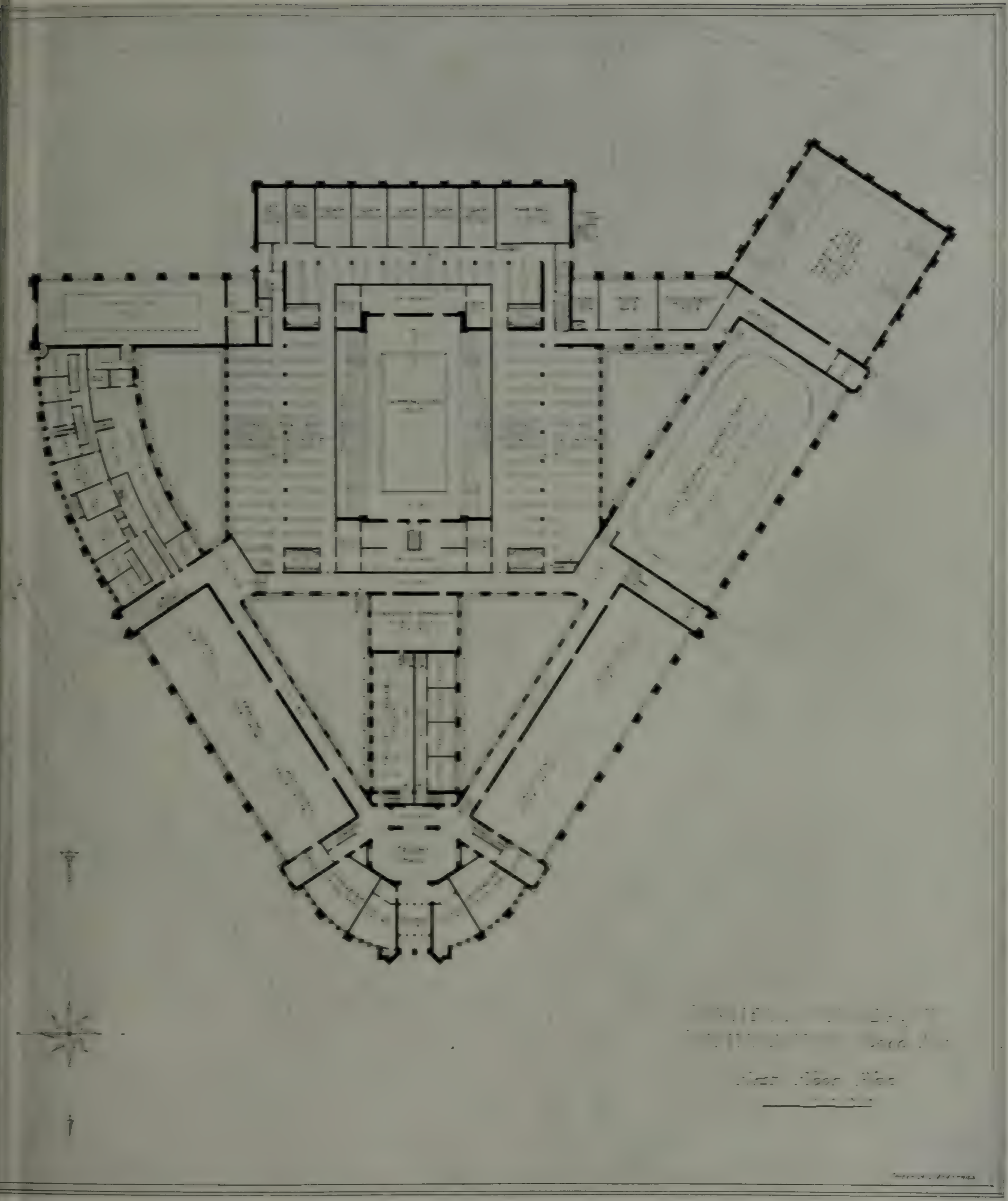
The low first-floor corridor windows permit cross ventilation of the gymnasium rooms.





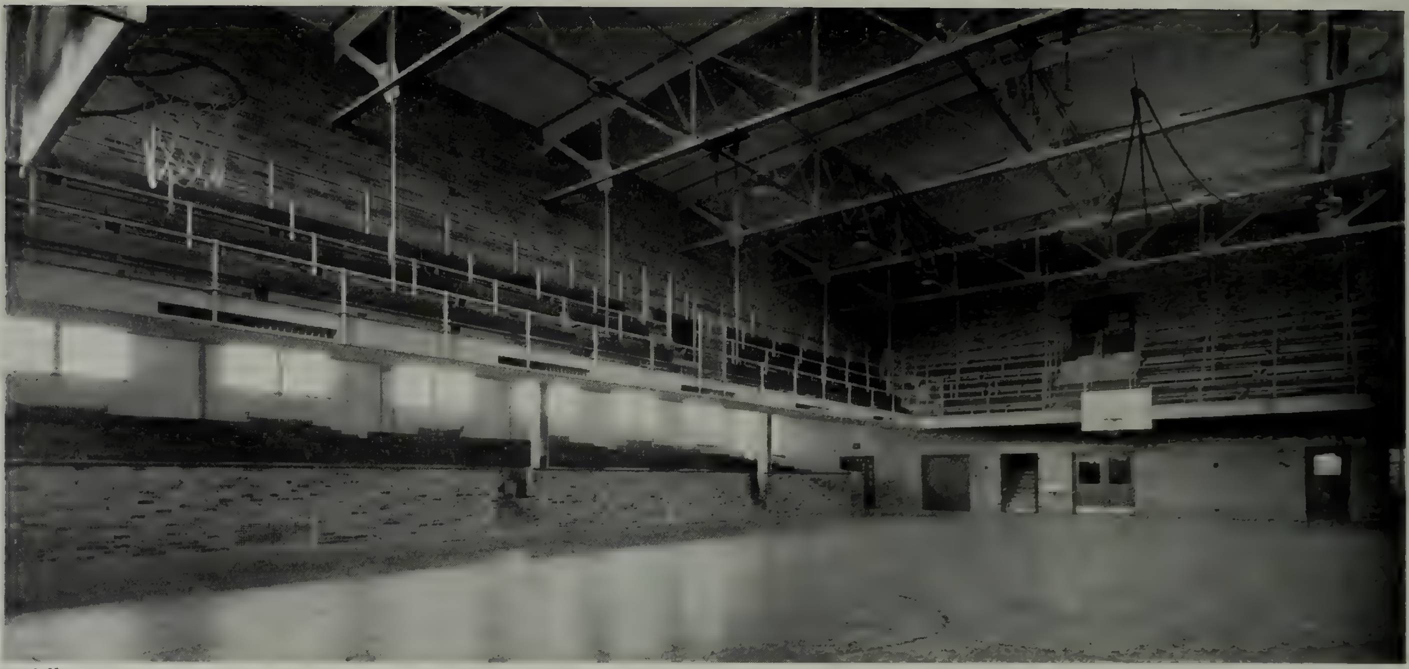
PROPOSED GYMNASIUM
CORNELL UNIVERSITY, ITHACA, NEW YORK
FREDERICK L. ACKERMAN, ARCHITECT

The placing of stairs between pairs of rooms eliminates need of second-floor corridors, thus permitting cross ventilation of gymnasium rooms.



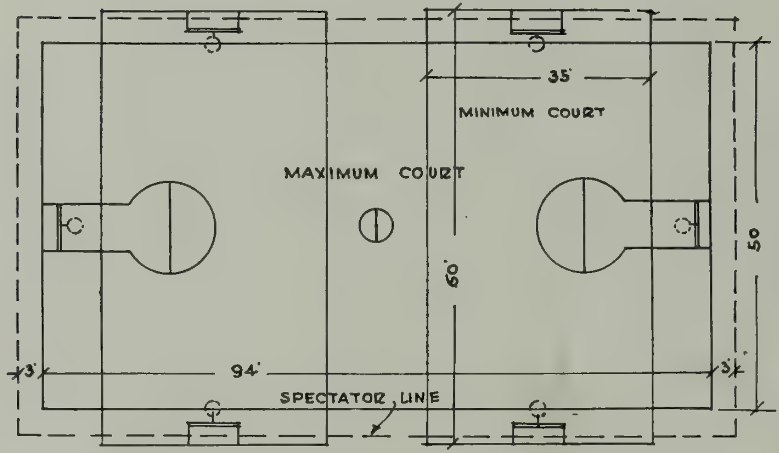
OPOSED GYMNASIUM
ORNELL UNIVERSITY, ITHACA, NEW YORK
EDERICK L. ACKERMAN, ARCHITECT

Gymnasium planned to meet requirements set forth in "Tabulation of Requirements of Various Athletic Activities," shown on pages 66 and 67.



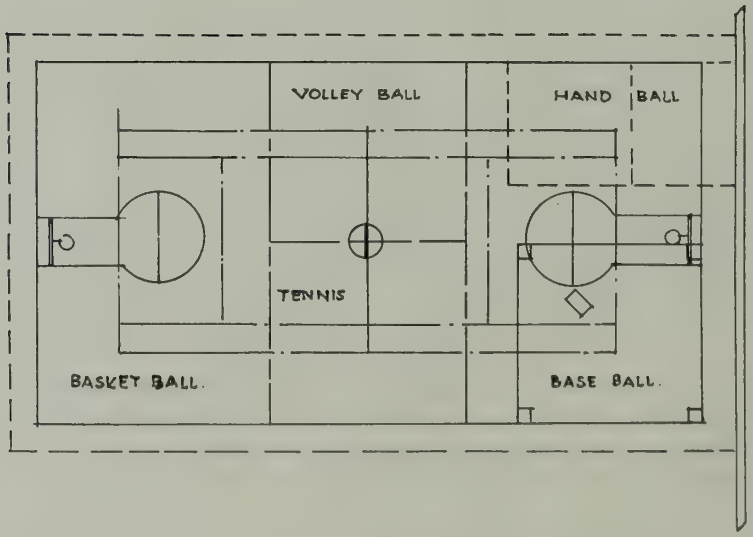
Hyskell

BOYS' GYMNASIUM
EAST HIGH SCHOOL, DENVER



SPACE REQUIREMENTS OF BASKETBALL GAMES DETERMINE SIZE OF MAIN GYMNASIUM FLOOR.

Maximum and minimum basketball court sizes. The large court may be used for exhibition games and the two smaller courts for minor or practice games.



Basketball court for exhibition games is large enough for other sports.

Basketball court determines size of main gymnasium floor

In determining the requisite size and shape of a gymnasium floor the requirements of basketball are practically always the determining factor. There are several reasons for this. In the first place, most of the other sports using the main floor will readily fit into any size and shape of space that is found suitable for basketball, whereas the reverse is not always true. In addition, basketball is not only the most important indoor sport, but physical directors agree that from the standpoint of contributing to the all-round development of the student, basketball is the best of all the indoor gymnasium sports.

Other facilities

The selection of other facilities to be incorporated in a gymnasium building for diversified activities will be largely a problem to be decided by the building committee. But the efficiency ratings of the various facilities given in the tabular questionnaire (see pages 66 and 67), together with the accompanying chart showing the value of the various activities, should assist the architect in advising what facilities should be included or omitted in any particular building.

Area cut-outs aid planning

Having determined the areas of the facilities to be provided (see pages 66 and 67), the architect may find assistance in the development of a logical scheme if cardboard cut-outs to scale are prepared for the various rooms. These cut-outs can be colored or otherwise treated to indicate requirements for height, lighting and ventilation.

REQUIREMENTS FOR BASKETBALL COURTS

OFFICIAL COURT SIZES

"The playing court shall be a rectangular surface free from obstructions and shall have maximum dimensions of 94 feet in length by 50 feet in width and minimum dimensions of 60 feet in length by 35 feet in width.

NOTE: By mutual agreement of the captains, Section 1 and the distance of the boundaries from obstructions named in Section 2, may be changed.

The following dimensions are considered ideal for teams whose players are of the age indicated for each group:

1. Elementary school age	40 by 60 feet.
2. High school age	48 by 75 feet.
3. College age	48 by 84 feet.

"These are the dimensions for the playing court only. . . . There shall be at every point at least 3 feet from any obstruction to the playing court . . . In planning the gymnasium, at least 10* additional feet should be provided on each side and each end." (7). In addition there should be allowance for portable bleachers or balconies.

EXHIBITION AND PRACTICE COURTS

"The ideal floor is one so proportioned that two or possibly three official basketball courts can be laid across the width of the gymnasium. These courts should have a minimum 6-foot spacing between adjacent side lines and a 3-foot minimum clearance between the side lines and the end walls. The exhibition court is then laid longitudinally with the gymnasium." (2)

Except for exhibition games the gymnasium floor is divided by folding partitions or a dividing net stretched between courts to keep play on one court from interfering with play on another court. Of some 20 institutions dividing their floors, it was found that 16 use nets, 2 use doors, and 2 use canvas curtains. The recommendations likewise favor the net but 12 prefer not to use any method of division. (1)

NUMBER OF BASKETBALL COURTS

A recent survey shows the desire on the part of athletic directors to double the number of basketball courts now available. (1)

SIZE OF BASKET BALL COURTS IN EXISTING GYMNASIUMS

The median size for present courts is 48 feet by 85 feet. Several of the smaller colleges favor 45 feet by 85 feet, although the recommended median size is 50 feet by 90 feet. (1)

BACKBOARDS: SIZE AND MATERIAL

"Backboards must be provided, the dimensions of which shall be 6 feet horizontally and 4 feet vertically. These backboards shall be made of plate glass or wood, or of any other material that is flat and rigid. The faces of the backboards shall be painted white." (7)

POSITION OF BACKBOARDS

"The backboards shall be located in a position at each end at right angles to the floor, parallel to the end lines, and with their lower edges 9 feet above the floor. Their centers shall lie in the perpendiculars erected at the points in the court, 2 feet from the midpoints of the end lines. The faces of the backboards shall be 15 feet from the far edges of the free throw lines." (7)

SPECTATORS KEPT 3 FEET FROM BACKBOARDS

"The backboards shall be protected from spectators to a distance of at least 3 feet behind and at each end." (7)

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*The Architectural Bureau of the Y. M. C. A. feels that while 10 feet or more may be desirable for school or college gymnasiums this space is not essential in their gymnasiums in most instances where spectator space is a secondary consideration.

REQUIREMENTS FOR GYMNASTIC ACTIVITIES

CEILING HEIGHT

"Dropped beams or pipe hangers on which suspended equipment is attached should never be less than 18 feet from the floor. The ideal height is 20 feet to beams or ceiling, and 22 feet is the maximum. Where greater ceiling heights are used it is necessary to provide expensive and unsightly pipe hangers dropped from the beams for the proper attachment of suspended equipment." (2)

The questionnaire sent out to physical directors indicated that "ceiling height (in existing gymnasiums) showed considerable range; the upper height varying from 20 to 65 feet and the apparatus supports varying from 18 to 30 feet. The median figure for the upper or peak height was 30 feet and for the apparatus supports 22 feet. The recommended heights approximated these figures." (1)

WALLS

The walls to a height of 6 feet should be left as clear as possible to permit the installation of gymnasium equipment. "In a well-planned gymnasium, the only breaks in the walls which should interfere with the placing of gymnasium equipment are doors, which should be limited in number." (2) In school and Y. M. C. A. gymnasiums a window is frequently provided through which the physical director can obtain a full and unrestricted view of the gymnasium floor while seated at his desk, but this is seldom done in college gymnasiums,

The doors should be at the corners of the room to facilitate placing of bleachers.

RUNNING TRACKS AND BALCONIES

There is a decided tendency to eliminate running tracks and spectators' balconies in the newer gymnasiums. The running track is being omitted as the expense is not justified by the amount of use, and spectators' balconies have little value, as generally only a partial view of the first floor is obtained except by those in the front row.

Should special considerations warrant the inclusion of the balcony or running track it should not exceed 6 feet 6 inches width for a 60 by 90 foot gymnasium or smaller, as it will seriously interfere with basketball. The ideal clear height above the floor is 12 feet. The balcony should in no case have less than 10 feet in the clear from the underside as a lower height would prevent the attachment or installation of certain pieces of equipment.

STORAGE SPACE FOR GYMNASIUM EQUIPMENT

One of the most common errors in gymnasium design has been the failure to provide sufficient space for storage of gymnasium apparatus. For the ordinary gymnasium not over 60 feet by 90 feet in size the apparatus storage room should approximate 400 square feet in area. The door should be at least 5 feet in the clear. The flooring of the gymnasium should extend into the storage room on the same level without a break or sill.

SEATING ACCOMMODATIONS FOR SPECTATORS

BLEACHERS

The proper handling of spectators is an important item in the design of a gymnasium. For the large gymnasium or building containing several gymnasium floors the problem is comparatively simple, since one of the rooms may have permanent seats. For the small gymnasium where space and money are limited, the provision of adequate spectator space may be a problem. However, it should not be overlooked that adequate spectator space may be a real income-producing asset to a club. Failure to make ample provision for space for bleachers may be a penny-wise and pound-foolish policy.

There are three major types of bleachers in use: the type that hooks into the wall, the roll type and the portable type. Up to five-row capacity, the type that hooks into the wall requires less storage space and is probably less expensive. Beyond this height it is necessary to install intermediate supporting horses which reduce this saving as the height increases. The Y. M. C. A., which seldom has over five-rows bleacher capacity, favors the wall-attached type of bleacher but this type lacks the flexibility of use of the portable type which may be arranged in different ways, either for interior or exterior use.

STORAGE SPACE REQUIRED FOR BLEACHERS

It is very important when planning a gymnasium to provide ample storage space for bleachers whether they are included in the original contract or not. The floor area of the storage for wood bleachers should be one-eighteenth of the floor space occupied by bleachers when erected. (Steel bleachers require one-thirteenth.) As most bleachers come in 16-foot sections, it is advisable to have the storage room 18 feet long. The width may vary according to the requirements of the particular plan.

The accompanying plan shows that spectator entrances at the corners of the gymnasium will give a greater number of seats with good view than spectator entrances at the center of the gymnasium. Entrance aisles at the corners also add to the visibility of corner seats. Consideration should be given to proper location of doors in relation to bleachers even if they are not in the original specifications or contract, as there are cases where failure to consider their installation has resulted in a serious handicap at a later date when bleachers were installed.

It will be noted from the accompanying plan that the section with entrances at the corners permits 13% more seats and a larger proportion of the seats have good vision than the section with the center entrance.

MINOR ATHLETIC ACTIVITIES

VOLLEY BALL

The playing surface for volley ball, 30 by 60 feet,* is almost identical with the minimum court size for basketball, 35 by 60 feet.

HANDBALL

"The standard game of handball is played in a four-wall court, 15 by 15 by 30 feet, but a simple and entirely satisfactory handball game is played with one, two or three walls. In fact, the demand for handball courts in college gymnasiums has been so great during the past few years that courts have been improvised wherever a smooth wall of at least 150 square feet and a distance of 25 or 30 feet of floor space could be found.

"In planning a new gymnasium building for a college or school, one standard handball court might be provided for each four hundred students and faculty. In addition to the standard four-wall courts, one long wall in every gymnasium should be constructed of smooth material and as many one-wall handball courts as possible be laid out on the wall and floor. These courts can be used when the gymnasium is not in use for classes or basketball.

"A good size for a one- or two-wall court is 16 by 20 feet for the playing space on the wall and 20 by 34 feet on the floor. There should be at least 10 feet of clear space behind the back line on the floor."

SQUASH RAQUET AND SQUASH TENNIS

These two games are gaining in popularity very rapidly. The space to be provided will depend on local conditions and policy of the athletic director.

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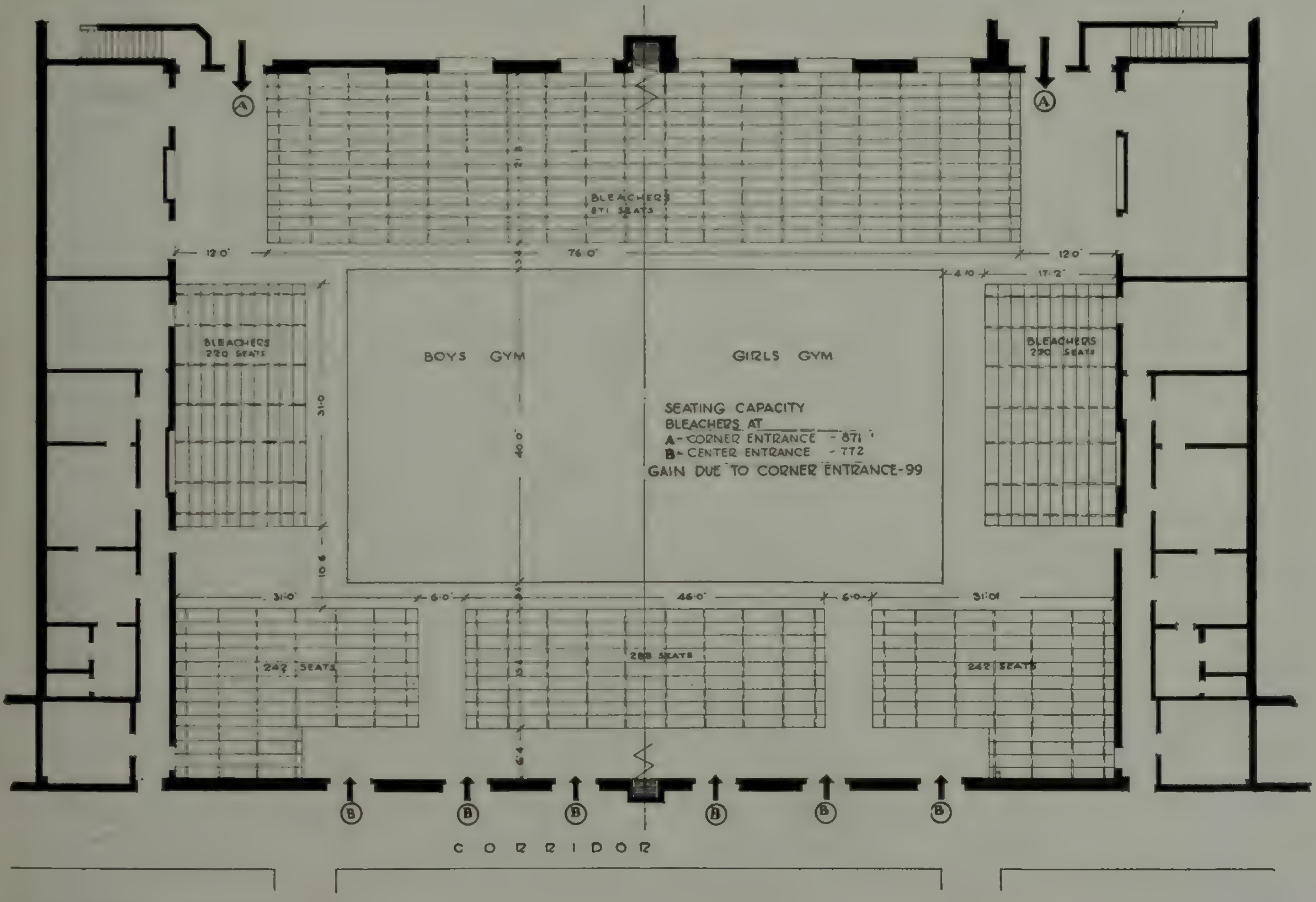
*The size of the court may be modified for either indoor or outdoor informal games to accommodate larger or smaller groups to suit local requirements. It is urged that the standard size court be used in all match games, where possible. (8)



BLEACHER LAYOUT

BENJAMIN FRANKLIN HIGH SCHOOL
ROCHESTER, NEW YORK
EDWIN S. GORDON, ARCHITECT

Corner entrance "A" gives better seating arrangement than center entrance "B".

CORRECTIVE GYMNASIUM

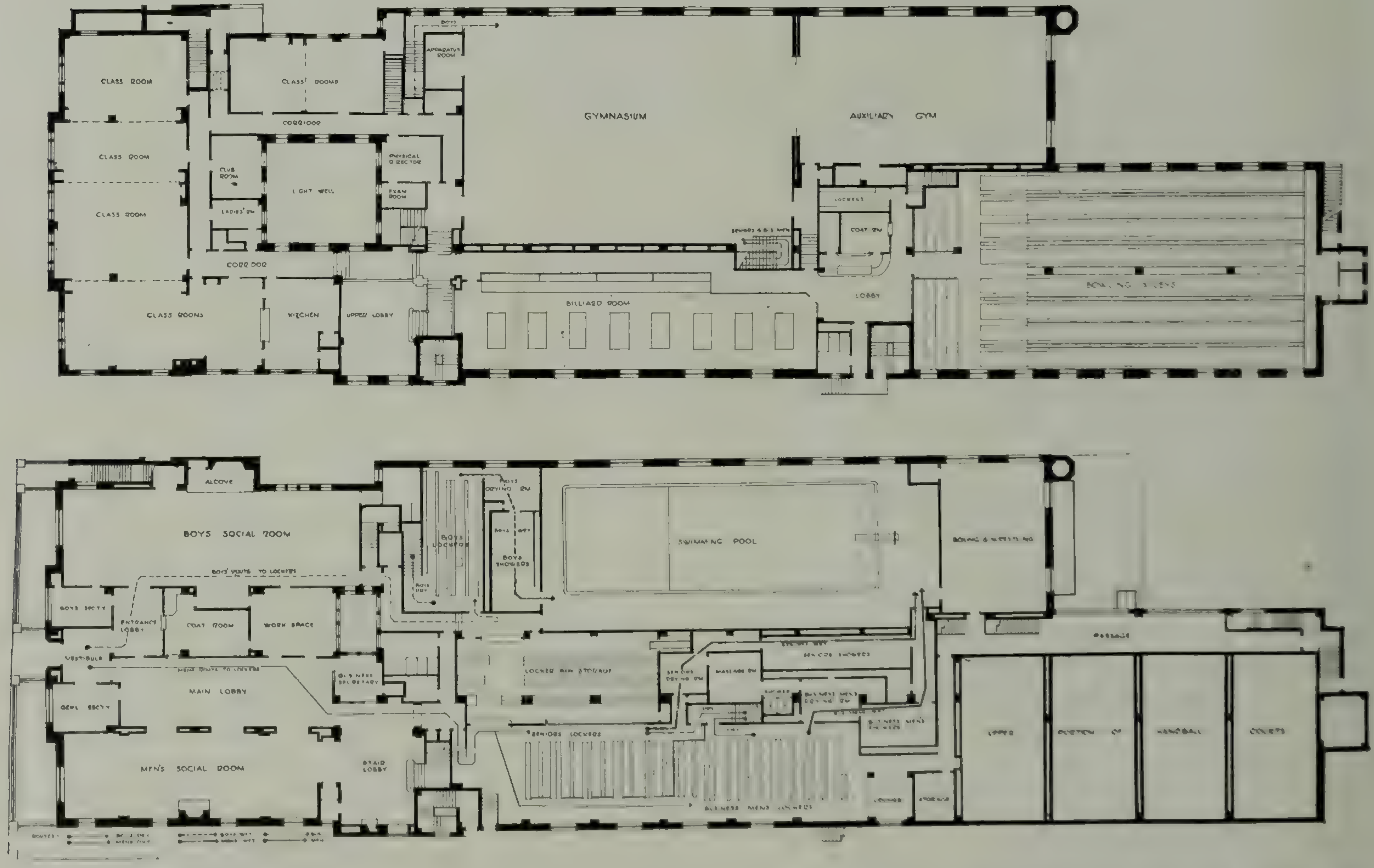
A room preferably approximately 25 by 50 feet should be provided for individual student work or for the work of smaller groups needing special corrective attention.

DIRECTOR'S OFFICE

"The efficient administration of the physical training department depends in large measure upon the location of the offices of the physical directors in relation to the rest of the rooms of the department. The offices should be easily accessible to gymnasiums, dressing room, anthopometric or examining room and athletic field. Each gymnasium should be provided with separate director's office so located as to permit a view of gymnasium floor." (5)

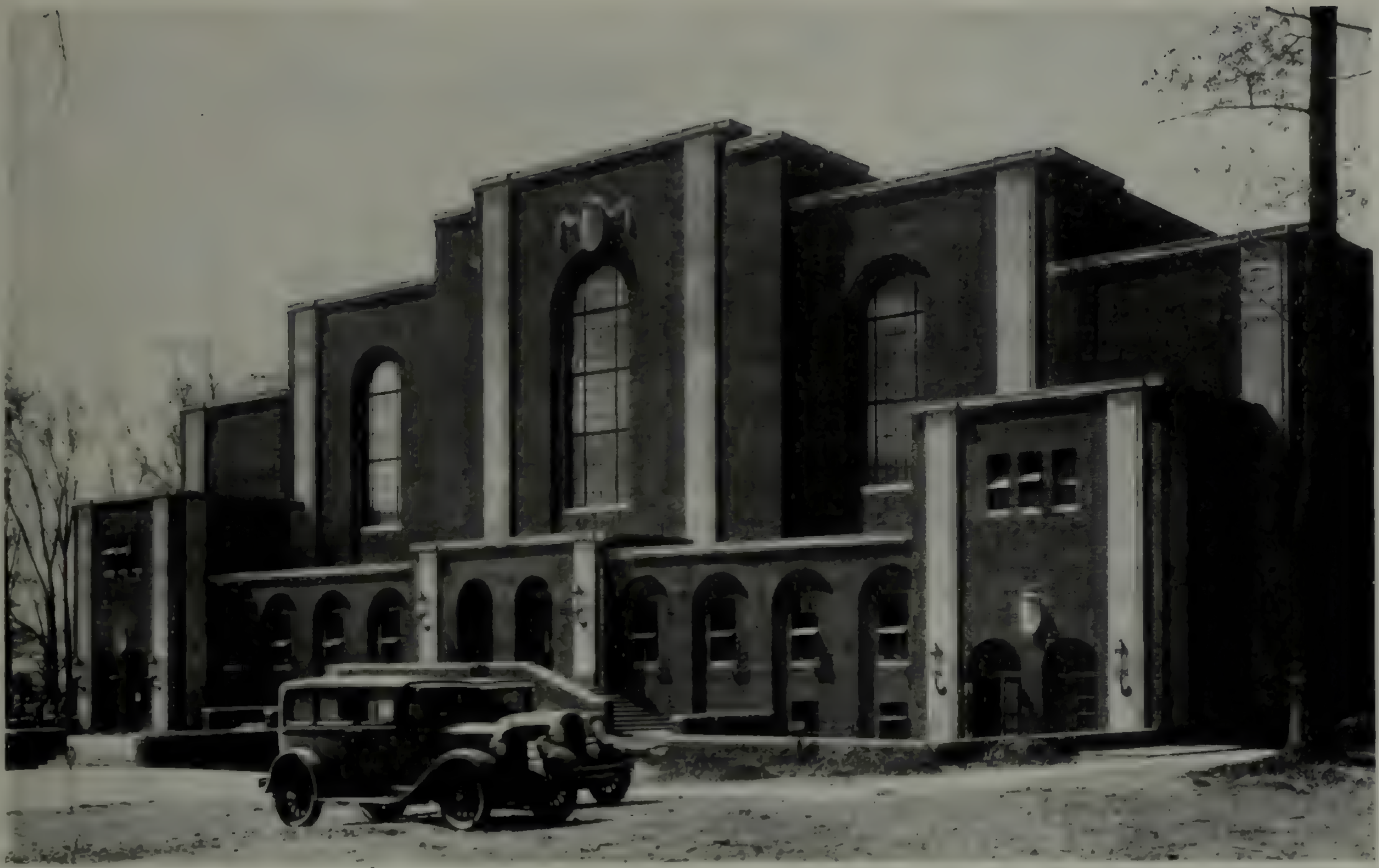
Equipment should consist of instructor's desk, instructor's chair, visitors' chairs, filing cabinet, bookcase, first-aid cabinet. In the smaller gymnasium where separate storage facilities are not provided for athletic supplies, the director's office should have a cabinet for storage of basketballs, handballs, indoor baseballs and other similar gymnasium equipment. Provision should also be made for locker and shower in lavatory for physical director.

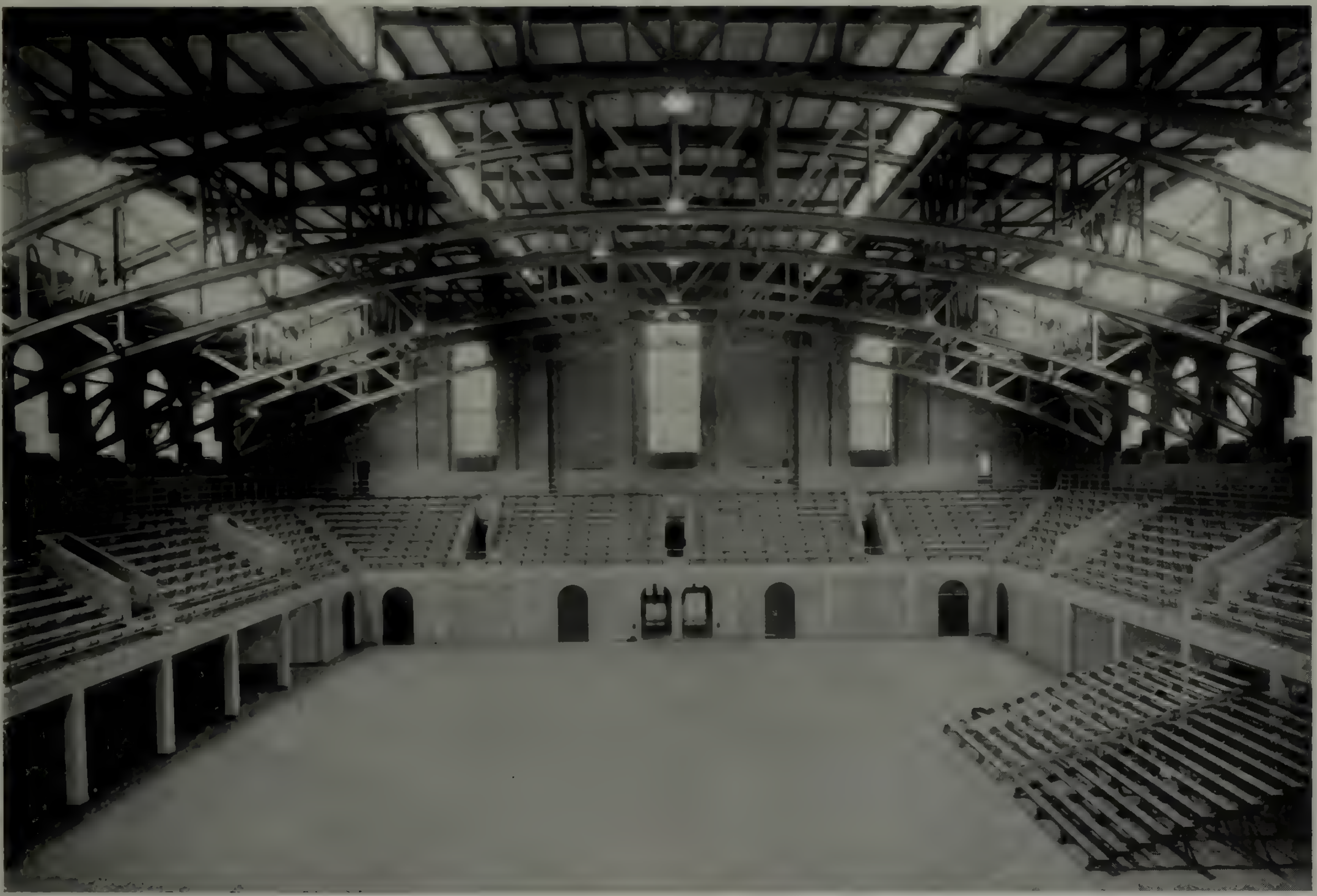
MEN'S RECREATION BUILDING
PENNSYLVANIA STATE COLLEGE
CHARLES Z. KLAUDER, ARCHITECT



Y. M. C. A. BUILDING
GERMANTOWN, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

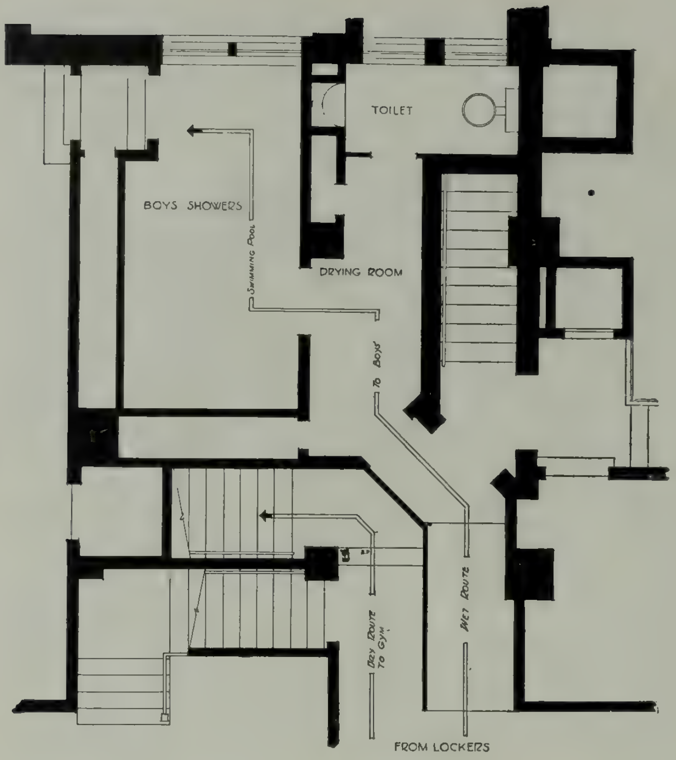
Traffic lanes for men and boys kept entirely separate.



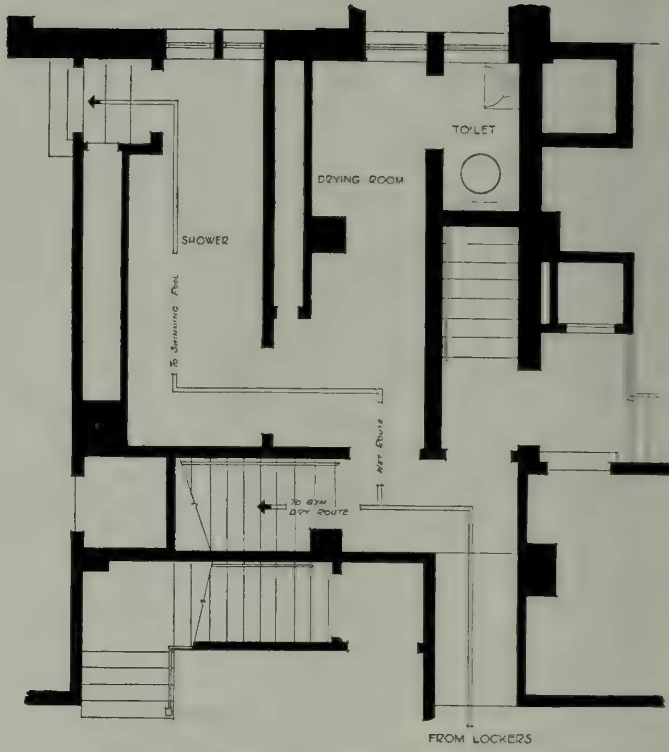


MEN'S RECREATION BUILDING
PENNSYLVANIA STATE COLLEGE
CHARLES Z. KLAUDER, ARCHITECT

Portable bleachers may be used in addition to permanent seating arrangement.



PLAN A—ORIGINAL LAYOUT
Y. M. C. A. BUILDING, EASTON, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS



PLAN B—IMPROVED LAYOUT
Plan changed to obtain separation of wet and dry traffic lanes.

EXAMINATION ROOM

This should be located adjoining the physical director's office, with access from the locker room. It should be equipped with scales, lounge, rest chairs, first-aid cabinet and all equipment necessary for physical examination.

TRAFFIC CIRCULATION IN A GYMNASIUM

The ideal plan is one in which corridors are eliminated. Although it is not possible to eliminate corridors entirely, "second (or third) floor rooms should be approached by stairs so placed with reference to a pair of rooms, that second (or third) floor corridors may be reduced to a minimum." (1)

"When it is necessary to cross wet or muddy ground before reaching the lockers or gymnasium, ample provision must be made on the line of circulation for the storage of overshoes, or the cleaning of shoes, and the member must be able to go to his locker and from his locker to the gymnasium without having to pass over the space that he has already walked on, thus avoiding tramping mud into the gymnasium." (10)

Consideration should be given to the proper routing of spectator and participant traffic. The latter should be further separated into independent circulation systems for men and women or men and boys when there is a dual use of the building. Each of these classes should have further separation between wet and dry traffic from locker room to swimming pool or gymnasium.

Routing of persons from the entrance to locker rooms is a comparatively simple matter for most gymnasiums, but for gymnasiums handling two or more classes of memberships (such as co-educational schools or the Y. M. C. A. and Y. W. C. A.) it is very desirable to provide for complete separation of the different classes of users. In association buildings separate entrances for the boys and men should be provided whenever the site conditions permit. When this is not possible, it is well to separate the two classes of membership as near the entrance as possible.

Traffic to and from the gymnasium should not cross the traffic to and from the showers and swimming pool, as water may be tracked on to gymnasium floors.

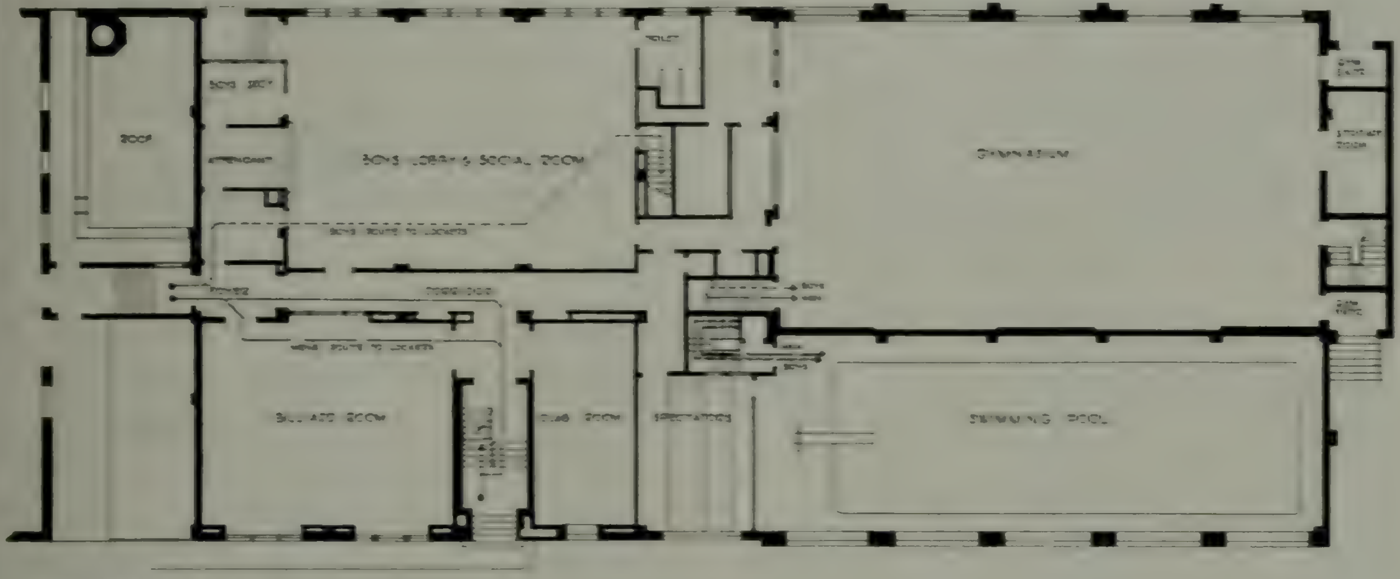
When two classes of membership use the same gymnasium, separate means of circulation should be provided between locker rooms and gymnasium or pool when possible, although compromises will have to be accepted at times due to site conditions or other limiting factors.

Plan A, Y. M. C. A., Easton, Pa., shown above, shows the original traffic arrangement on a limited site, and Plan B shows how this was modified to obtain a greater degree of separation, even under very limited conditions.

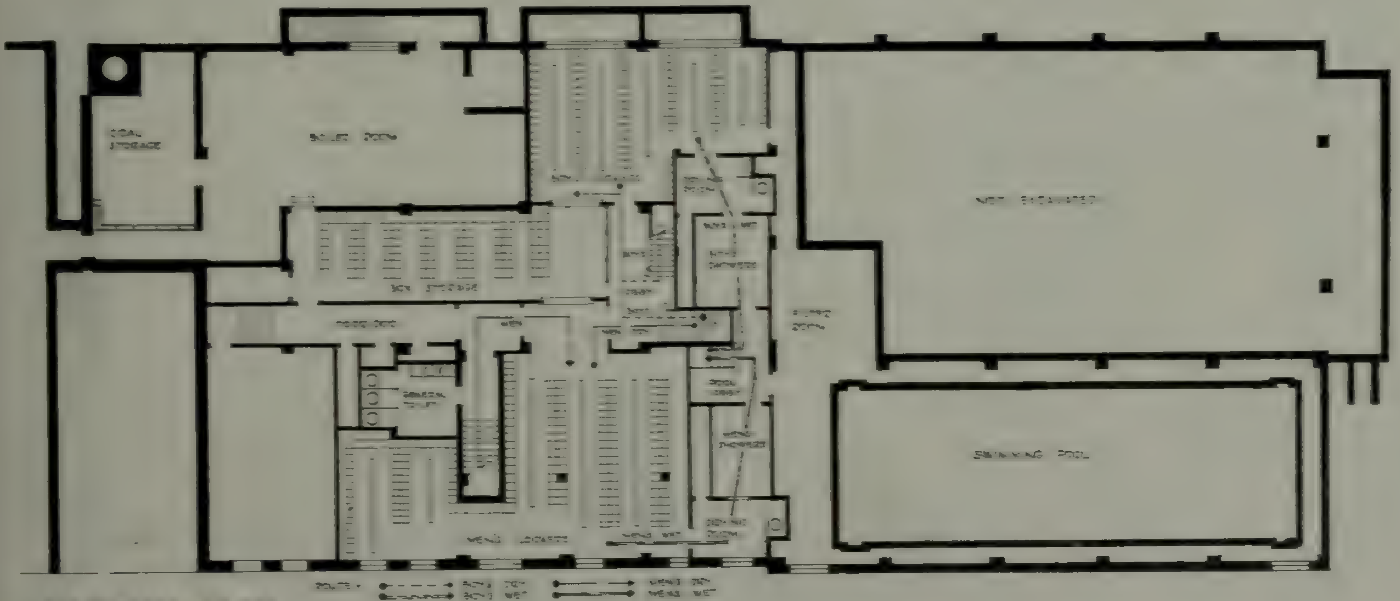
Traffic circulation for spectators is not a serious problem in most association or school buildings, but for the larger high school or college gymnasiums or gymnasiums used as auditoriums considerable thought should be given to this problem to prevent congestion at any point. For the dual-use gym it is frequently desirable to have special exits from the gym floor to the outside for use of audience or spectators. It is also well to consider the location of public toilets in relation to spectator space, as the general public should not be admitted to the toilets off the locker rooms. Public traffic should be entirely separated from the circulation to and from the gym floor.

In planning circulation for boys as much of the stair and hall space should be open to observation by attendants as can be conveniently arranged. The arrangement in plan shown below is such that a large portion of circulation is visible to the tote-box attendant.

Traffic lanes to the pools should always enter through the drying and shower rooms. Where pools are to be used by both adults and children, as in schools or the Y. M. C. A. or Y. W. C. A., it is well to have the adults enter the pool room at the deep end of the pool and the younger group enter at the shallow end. (See page 76.) Stairs should be avoided when possible between locker room and pool, as there is always a danger of slipping.



FIRST FLOOR PLAN



BASEMENT PLAN

Y. M. C. A. BUILDING NORRISTOWN PA.
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

Plans showing careful study of traffic requirements. Traffic lanes to swimming pool should always enter through drying and shower rooms.

CONSTRUCTION OF GYMNASIUM FLOORS

SELECTION OF WOOD

"If there is one element upon which there is general agreement it is the use of maple wood as the top flooring. Hard pine and oak are also used, but should be avoided as they splinter." (1)

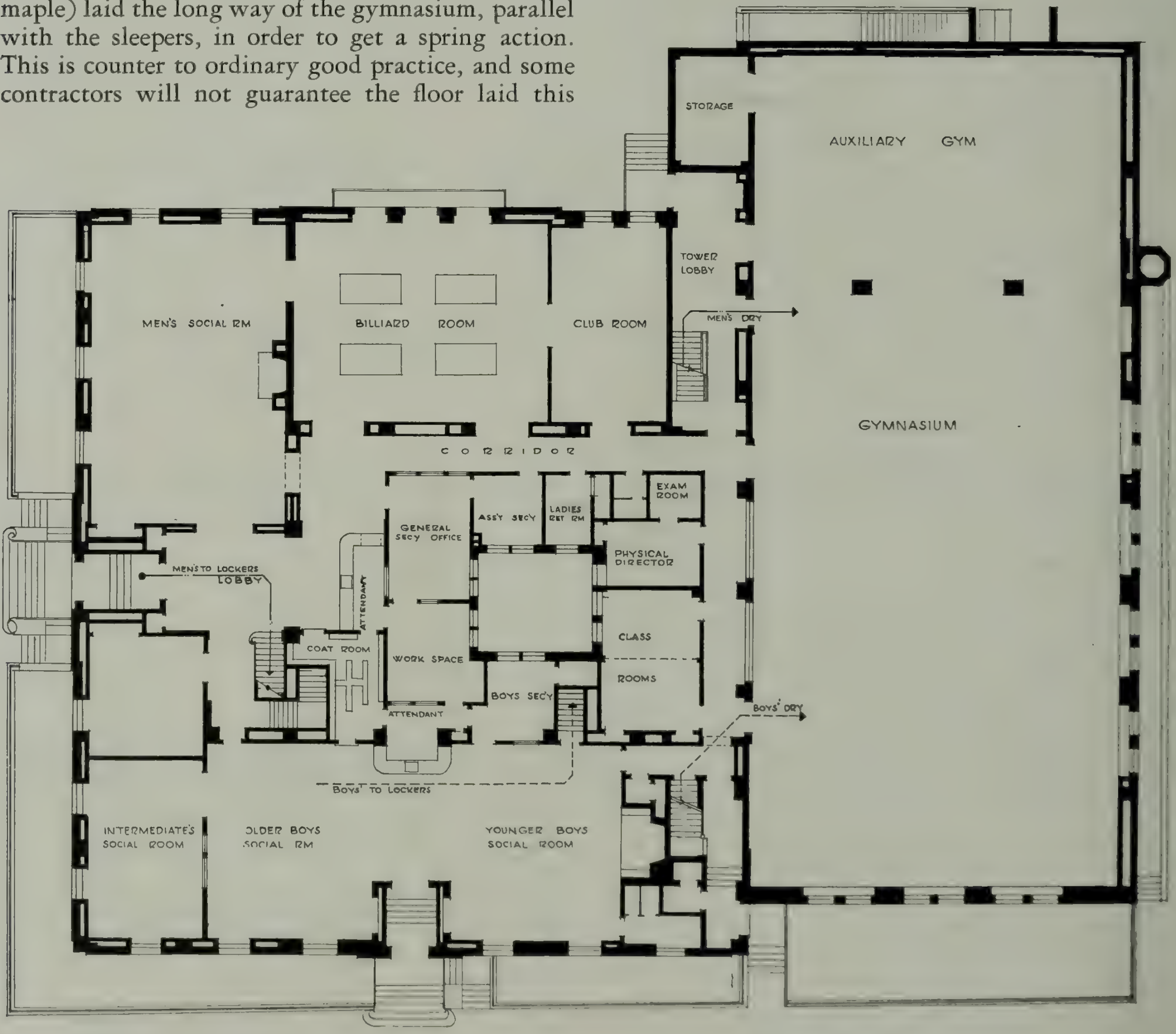
SINGLE OR DOUBLE FLOOR

There is a difference of opinion as to whether a single or double floor should be used. It is a problem of getting a floor which will stand concentrated loads, from heavy floor apparatus, or the vertical lifting strains of floor-guyed pieces, and yet have sufficient spring to be comfortable for the players.

If double flooring is used the sub-floor should be laid diagonally over sleepers laid the long way of the gymnasium, and the top floor (7/8 to 1 1/8-inch maple) laid the long way of the gymnasium, parallel with the sleepers, in order to get a spring action. This is counter to ordinary good practice, and some contractors will not guarantee the floor laid this way; but there are many gymnasiums where this type of floor has been used for some years with entire satisfaction.

"If a double floor is not used, the single floor should be of hard maple not less than 1½ inches thick. To prevent single flooring from pulling up when subjected to vertical strains, the ends of all boards should terminate directly over the wood joists." (2)

Y. M. C. A. on corner lot. Entrance for men on different street from boys' entrance, with complete separation of facilities which is desirable.



Y. M. C. A. BUILDING, WILLIAMSPORT, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

FLOOR FINISH

Oil varnish and natural finish are nearly equal in popularity. (1)

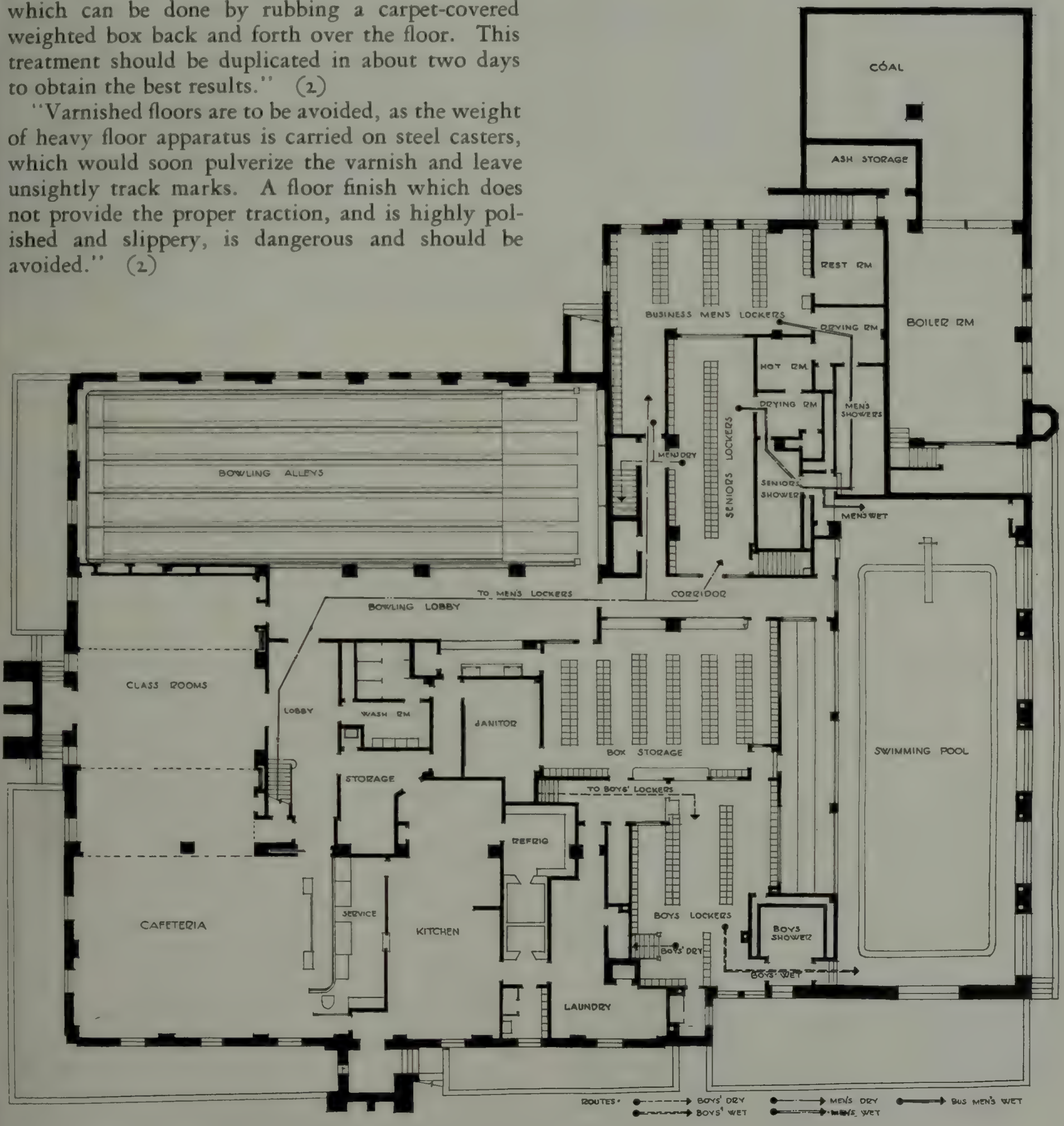
"Raw linseed oil has been commonly used for finishing the floor. This is best applied at or near the boiling temperature by one person, a light coat being brushed on with the grain of the wood. Before this has had a chance to cool the oil which has not instantly penetrated the floor should be wiped off by a second workman. A third workman should follow the second, vigorously and thoroughly wiping the floor dry. The final finish is polishing, which can be done by rubbing a carpet-covered weighted box back and forth over the floor. This treatment should be duplicated in about two days to obtain the best results." (2)

"Varnished floors are to be avoided, as the weight of heavy floor apparatus is carried on steel casters, which would soon pulverize the varnish and leave unsightly track marks. A floor finish which does not provide the proper traction, and is highly polished and slippery, is dangerous and should be avoided." (2)

BASE ANGLE

A 2-inch by 4-inch angle iron with the 4-inch side up should be placed against the wall, as heavy movable floor apparatus have extended iron bases which will damage a wooden base.

Separation of wet and dry routes prevents tracking dirt into swimming pool and water into gymnasium.



Y. M. C. A. BUILDING, WILLIAMSPORT, PENNSYLVANIA
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

Courtesy American Federal Cement Tile Co.

GYMNASIUM, UNIVERSITY OF CHICAGO

WALL CONSTRUCTION

The tendency in recent gymnasiums, according to some authorities, seems away from the use of equipment attached to the wall and towards the use of free-standing portable equipment. When this is the case, a glazed tile* will frequently be found a satisfactory material to use on account of the larger size of the units, but brick is generally preferable when considerable heavy equipment is to be attached to the wall.

Cork has been used as a wall covering in some gymnasiums. It may be applied directly to the masonry or to sheathing boards furred out from the masonry wall.

As most gymnasiums are not kept warm at all times, it is desirable to have a wall surface that is easily heated. The surface of a wood or a cork-over-wood lining to a masonry wall can be brought to room temperature in approximately 10 minutes, whereas if brick were substituted for the wood or cork lining it would take from 6 to 8 hours to bring the surface to room temperature (utilizing in both cases twice the amount of heat that would be required to maintain an even temperature once the wall were warm). (14) This not only effects a saving in cost of heating the room to the desired temperature, but practically eliminates danger of moisture condensation. The room is also more comfortable, for even though the air temperature may be satisfactory a cold masonry wall absorbs more radiant heat from players' bodies than a wood or cork-surfaced wall. Cork has the additional advantage of lessening the reverberation of a gymnasium room. This is an important problem when the gymnasium is used for both auditorium and gymnasium purposes.

In order to obtain a light-colored wall which is sound-absorptive and yet washable, it might be desirable to use cork carpet for wall covering. Whatever the surface used, it should be one that can be washed easily, as the walls become soiled very quickly from dirt-covered basketballs or indoor baseballs. Paint is generally unsatisfactory as it costs too much to be kept looking well.

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*Regarding the use of tile walls, the Narragansett Machine Co. writes—"If you could live in our business for a few weeks, we think you would more strongly discourage the use of hollow tile for interior gymnasium walls. If you erected a gymnasium to be used for nothing but basketball without a single piece of gymnasium apparatus, you would find hollow tile walls would not hold basketball backstops which in the great majority of cases are braced out from the walls by means of pipe arms or brackets. We also believe that you should go very slowly on such new ideas as cork facing for gymnasium walls."

APPARATUS STRIP

If wall apparatus, such as pulley weights, mat hangers, wand racks, etc., are to be used, it is advisable to install a heavy 8-inch wide apparatus strip centered 5 feet from the finished floor. This strip should extend around the entire gymnasium and should be bolted direct to the walls. To prevent injury due to projecting bolt heads, the bolt holes should be countersunk so that the heads of the bolts are flush with the face of the apparatus strip.

DOORS

Doors to a gymnasium room or exercise room should open out, as there would be danger of a player being injured by running into a door opened inward by someone entering the gym. Doors to shower rooms or swimming pools should be covered with a rustless metal such as copper, aluminum, or chromium nickel steel.

ROOF USED AS GYMNASIUM

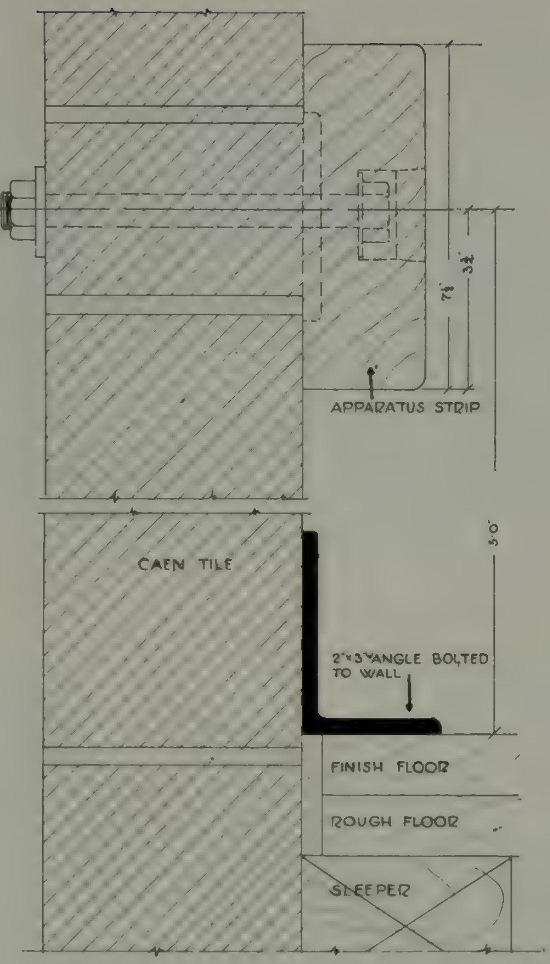
There is a decided tendency in many cities to utilize the roof space of school, club or gymnasium building for exercise space. When this is done, there is always the problem of providing a suitable playing surface which will be weatherproof and withstand the action of sun and freezing. One of the most satisfactory methods of treating such a roof has been to use wood ship-decking. The entire roof should be covered with netting to eliminate any possibility of an accident to a player or of a ball getting out and injuring someone on the ground.

The lighting fixtures must be recessed in the guard netting to eliminate any possibility of their being damaged or of their interfering with the gymnasium activities. Naturally special care must be taken to prevent any water entering the fixture. European gymnasiums make provision generally for sun baths on gymnasium roofs.

DAY-LIGHTING A GYMNASIUM

WINDOWS

In recent gymnasiums "the side wall area used for windows approximates 25%. The median of both present and recommended height of windows above the floor is 6 feet. Where balconies or tracks are present, 15 feet is the median." (1)



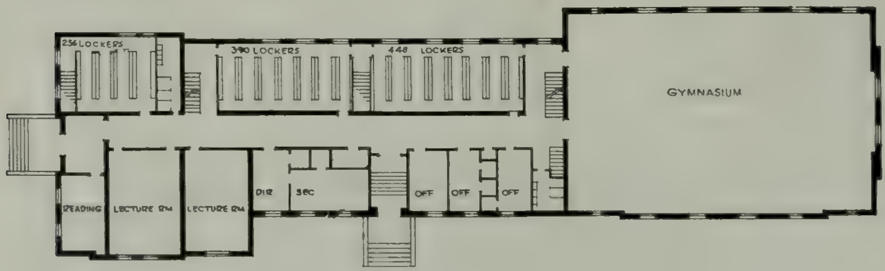
DETAIL OF APPARATUS STRIP BASE ANGLE AND FLOORING
Y. M. C. A., GERMANTOWN, PA.
THOMAS, MARTIN AND KIRKPATRICK, ARCHITECTS

Courtesy American Federal Cement Tile Co.

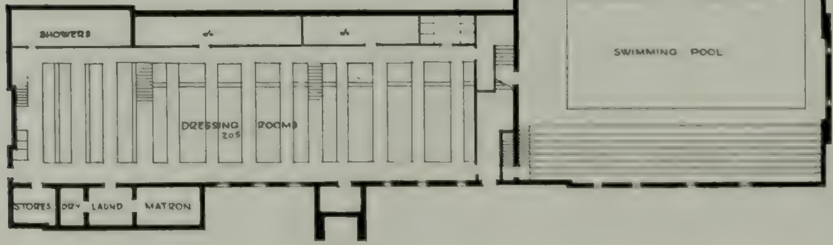
ROOF CONSTRUCTED OF FEATHERWEIGHT CONCRETE INSULATING ROOF SLABS

MEN'S GYMNASIUM

WOMEN'S GYMNASIUM



FIRST FLOOR



BASEMENT PLAN

PLANS OF WOMEN'S GYMNASIUM

UNIVERSITY OF COLORADO
DAY AND KLAUDER, ARCHITECTS

The louver type of window with mechanical operation is the best type for use in the large gymnasium room as the windows may be operated without opening the guard netting. The windows may also be opened for ventilation in rainy weather without danger of rain blowing into the gymnasium. In the large gymnasiums these windows can be operated electrically.

If the locker room is on the first floor or basement, double-hung windows should be avoided since they give no privacy when open. It is better to pivot the windows so that they screen the interior of the room when open. They should be high enough so that persons using the room will not cast shadows on them, and of obscure glass, rough side out to prevent dirt settling on the inner surface. Allow for fly screens and winter sash.

WINDOW SCREENS

"When windows are washed, the screens should slide out of the way, rather than swing, to fall back into place when the washing is done.

"These screens should be built on a heavy angle iron frame and should be made of No. 8 wire at least, to withstand the impact of a shot or a medicine ball. A thinner wire may save a little money in first cost, but will soon fall out of shape.

"The frames, hinges and locks of screens should be secured by expansion bolts in the brickwork, not by means of screws in wooden plugs." (10) Here is one of the chief sources of trouble in installation of gymnasium fixtures and equipment.

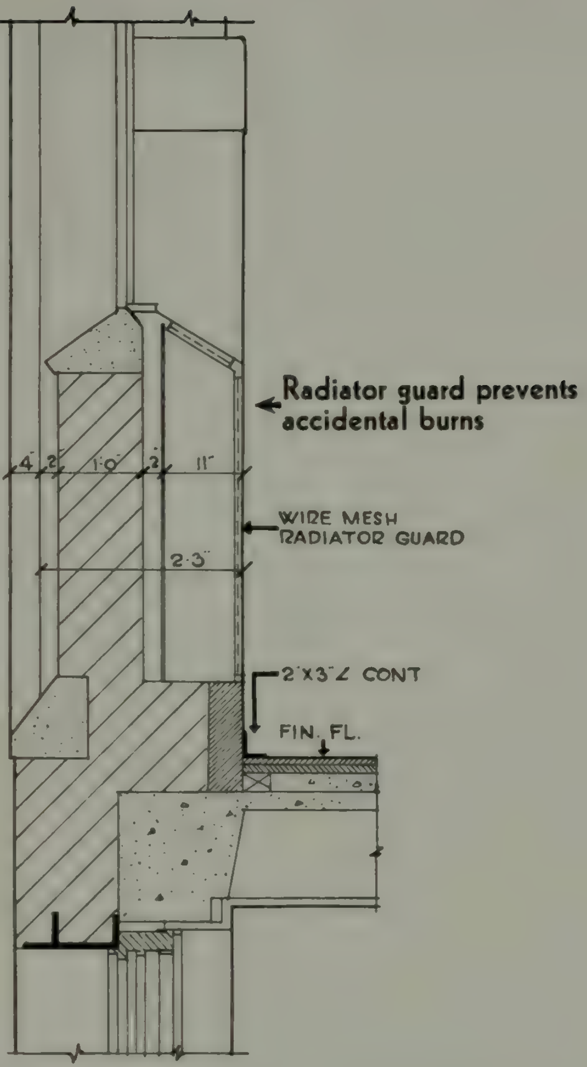
SKYLIGHTS

"The objection to skylights, besides leakage which can generally be avoided by correct design, is loss of heat. Most gymnasiums having skylights are cold, as the cold drops from the skylights very rapidly." (10)

Also it is difficult to wash a skylight without wetting the floor. It would seem advisable for gymnasiums to follow the lead of most of the newer industrial plants, which are abandoning skylights for saw-tooth construction or monitors with the glass perpendicular. This method of lighting has the advantage of being less liable to leak, and there is less difficulty encountered in preventing condensation water dripping on to the floor. With either the saw-tooth or the monitor type of overhead lighting, it is easier to get proper ventilation and double windows cut down the heat loss.

GLASS WALLS

The side walls of the gymnasium might well be built of some of the newer forms of hollow glass units now on the market. (See pages 59 to 62.) These will not only furnish sufficient heat insulation better than glass windows, but some of these units are sufficiently strong to withstand any shock they may be subjected to. If such a wall were to be used, it would be advisable to have a channel or "T" beam in the wall 5 feet from the floor for the attachment of apparatus.



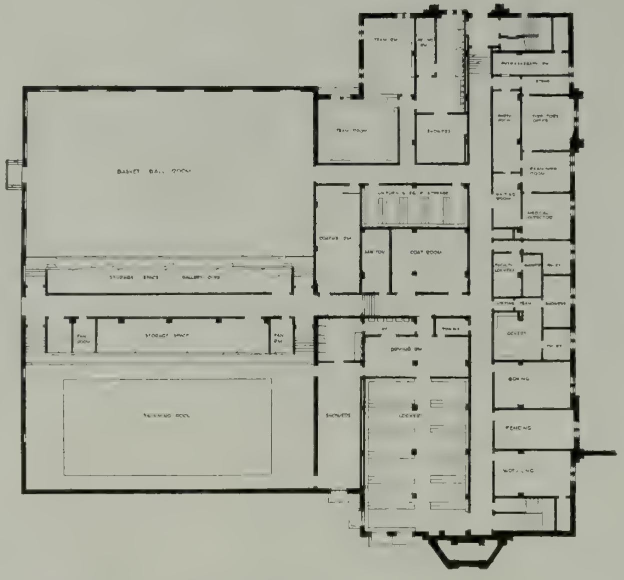
SECTION THROUGH RADIATOR ENCLOSURE
WHITE PLAINS HIGH SCHOOL, NEW YORK
STARRETT AND VAN VLECK, ARCHITECTS

LOCKER ROOMS AND LOCKERS

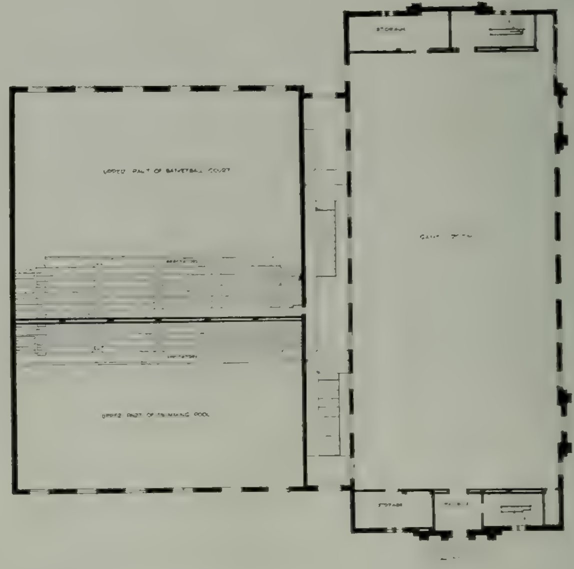
FOR MEN OR BOYS

The type of locker system used will determine the necessary space, but for preliminary estimate of space requirements for men's gymnasiums the following formula prepared by the Committee on Construction and Material Equipment of the Society of Directors of Physical Education in Colleges will be found useful.

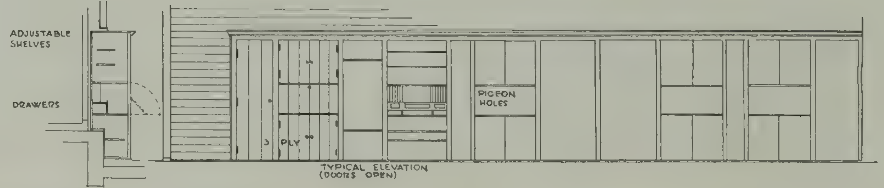
$$\frac{\text{"8 sq. ft. (min. per locker) x no. of lockers}}{\text{32 sq. ft. (min. per student)}} = \text{load that may be carried.}$$



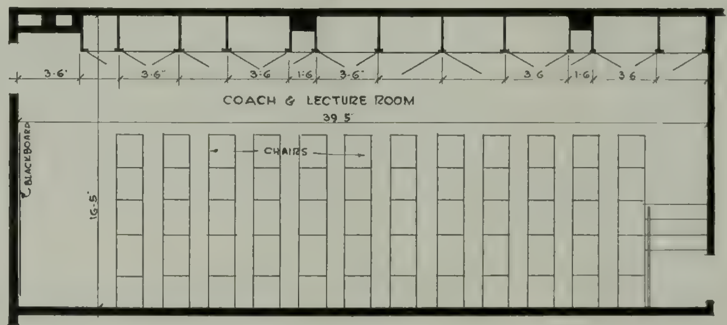
MAIN FLOOR PLAN
GYMNASIUM BUILDING



SECOND FLOOR PLAN



SECTION ELEVATION



PLAN

DETAIL OF COACH'S
LECTURE ROOM

THE HILL HIGH SCHOOL
POTTSTOWN, PENNSYLVANIA
CHARLES Z. KLAUDER, ARCHITECT

"If the resultant or load that can be carried is equal to or exceeds the actual load which will use the locker room at a certain time, 8 square feet will prove a sufficient allowance; but if the resultant is less than the actual load, the allowance per locker must be increased until loads are equalized. For example:

$\frac{8 \times 200}{32} = 50$, load that may be carried.

If the actual load is 100, then 16 square feet will be required per locker. If the actual load is only 40, then 8 square feet will be sufficient." (1)

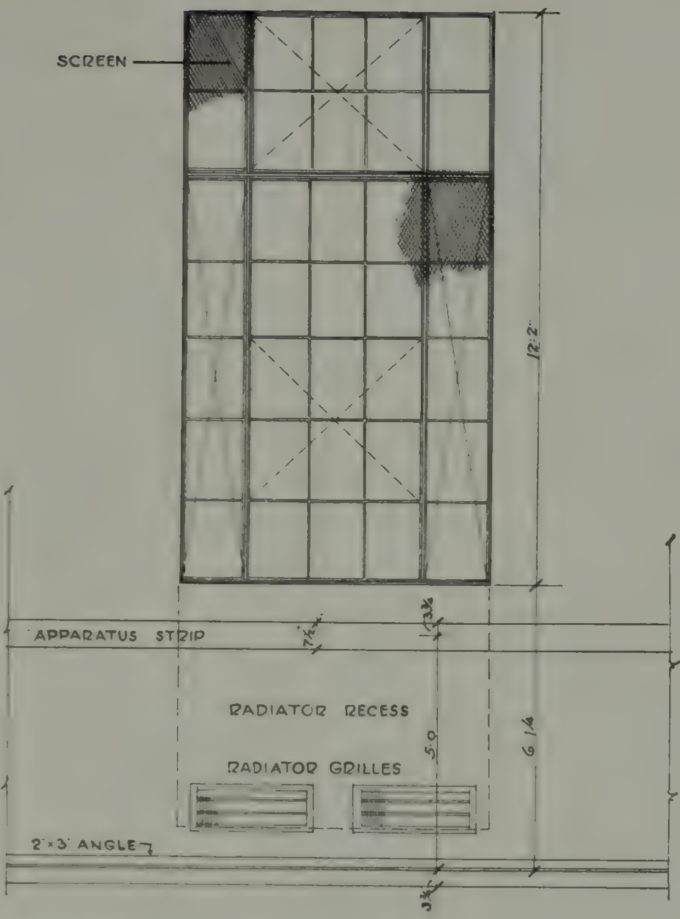
The reason for considering the allowance per locker and per student is that "a locker room built according to an allowance per locker may prove entirely inadequate when the peak load occurs; and likewise, a room built entirely upon an allowance per student may result in a waste of space."

LOCKER ROOMS FOR WOMEN

It is customary to provide private dressing rooms for women, but with changing ideas of modesty this is becoming a less necessary factor and in some cases, especially in the West, the locker systems as used in men's gymnasiums are being installed for women.

There are several types of dressing rooms in use: dressing rooms which contain lockers for the temporary storage of street clothes while the woman is on the gymnasium floor or in the pool and the dressing room which does not contain lockers, the clothes being carried to an outside temporary storage locker. The former type is to be preferred from the standpoint of convenience but when the gym is used continuously it is advisable, with this type, to provide twice as many dressing rooms as the peak load of the gymnasium in order to care properly for incoming and outgoing classes. Where the lockers are outside the booths it is only necessary to provide one-third more dressing rooms than the peak load; but this system is inconvenient, as can be seen from the following discussion of procedure necessary with this type, found in some Y. W. C. A. buildings.

On entering the gymnasium, the woman gets her tote box containing gymnasium suit from a storage rack (generally self-service) in the locker room instead of from a central attendant-controlled locker storage place as in men's gymnasiums. She finds an unoccupied dressing room, where she changes to gym clothes and then carries her clothes to a temporary storage locker outside the dressing room where she also leaves her tote box, taking the key with her. After using the gymnasium she will have to carry her clothes from this locker to some unoccupied dressing room, and later, after taking a shower and dressing, return the tote box to the storage rack. This is inconvenient compared with the system favored by the majority of men's gymnasiums. In addition to the inconvenience of the individual dressing rooms, the cost is considerably more than the open type, the installation of individual shower stalls is more expensive, considerable more space is required, and upkeep is more expensive.



ELEVATION OF GYMNASIUM WALL SHOWING RADIATOR RECESSED
Y. M. C. A., GERMANTOWN, PA.
THOMAS, MARTIN, AND KIRKPATRICK, ARCHITECTS

Discussion of this problem with the Y. W. C. A. reveals that most of the younger women would not object to the omission of dressing rooms, but the older women, especially those who take gymnasium work for reducing, much prefer the individual dressing room. The solution might be the provision of both types. The men's type is much more convenient for dressing and takes less space than the private room.

One architect says that the majority of school superintendents with whom he comes in contact favor having no more privacy in the girls' dressing rooms than in the boys'. The only difference would be in the shower rooms, where partitions might be installed between the showers. If this system is adopted it would probably be wise to provide special private dressing rooms for use of girls at times when they are unable to use the shower baths. These dressing rooms should be equipped with vending machines for sanitary napkins, lavatory, toilet and incinerator chute. It would be advisable to make these special dressing rooms easily accessible from the public hall or girls' toilet as well as from the locker room.

In the White Plains High School this problem is met by providing special private dressing rooms equipped with lavatories for some of the girls using the gymnasium.

LOCKERS

The survey conducted by the Committee on Construction and Material Equipment of the Society of Physical Education in Colleges showed that although the majority of recent gymnasiums have been equipped with the permanent type of locker, the majority of physical directors favor the tote-box system. The median of recommended measurement for lockers was 15 by 15 by 72 inches. This same survey found that the combination padlock was gaining favor over the key lock.

Entirely aside from the question of expense of equipment or space occupied by permanent lockers, one factor which influences the choice of the tote-box system is the ability to ventilate properly the tote boxes and to remove odors of stale suits from the dressing room.

LOCKER ROOM FLOORS

In a recent survey concrete was found to be the outstanding material used for locker room floors. Tile, however, is gaining favor. There were a few recommendations for floors covered with linoleum or rubber mats.

The floor should be coved, to facilitate cleaning.

BENCH IN LOCKER ROOM

"The permanent or stationary type of bench is distinctly replacing the movable type." (1)

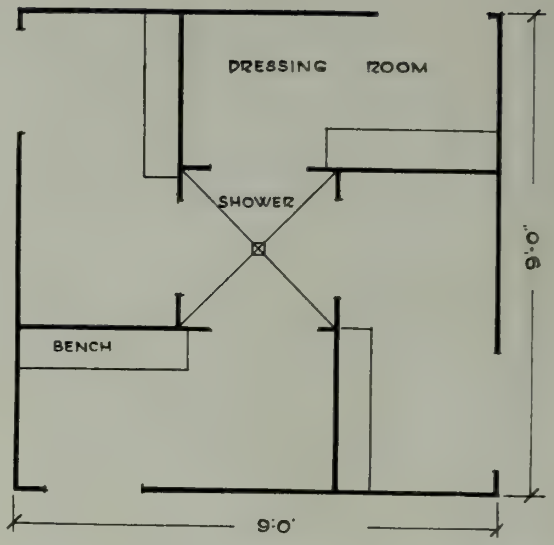
SHOWER ROOMS

FOR MEN

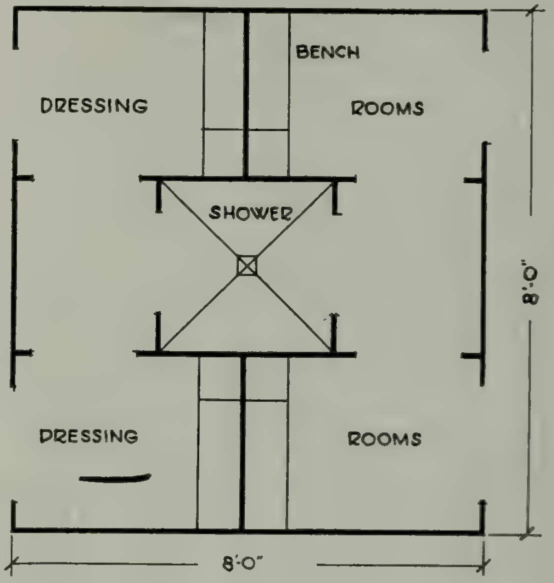
"Present practice indicates the median load per shower to be five men, whereas three is the recommended number. From this we may suggest that the number of showers will depend primarily upon the number of men in the maximum-size class. Thus, if sixty is the largest size class, twenty showers are recommended to facilitate the movement of the class through the shower room. Present construction also indicates the median number of square feet allowed per shower to be twenty-five, which multiplied by the number of showers needed, will give the approximate area required for the main shower room." (1)

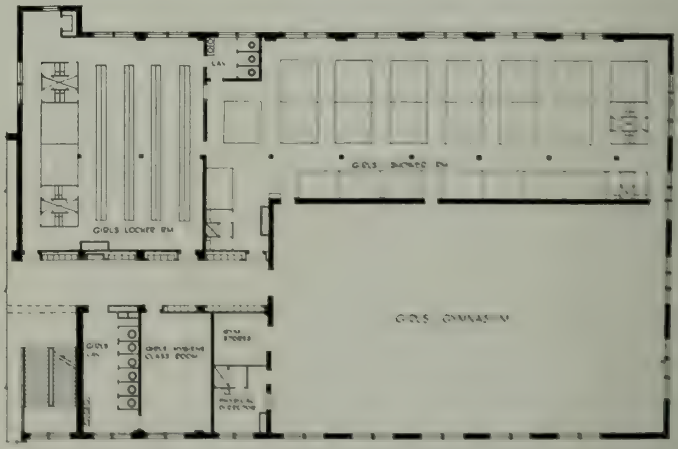
FOR WOMEN

It is customary to combine the shower with the private dressing room. When the shower is used in



SHOWER AND DRESSING ROOMS FOR WOMEN
LOUIS JALLARD, ARCHITECT (10)





GIRLS' GYMNASIUM AND DRESSING ROOM
EAST HIGH SCHOOL, DENVER

connection with a dressing room for a pool there is an exit on the opposite side of the compartment which leads to the pool, thus eliminating any crossing of wet and dry traffic circulation. When the shower is not used in connection with dressing rooms for swimming pools it has only the entrance from the dressing rooms.

SHOWER EQUIPMENT

"The group type of shower, or as some prefer, the individual shower as distinguished from the individual stall type, is nearly a universal choice. A few schools prefer the individual stall." (1) The individual stall type is more favored for use in women's shower rooms.

Speaking of mixing valves, the architectural bureau of the Y. M. C. A. says: "We have been getting very satisfactory operation and economy through the use of separate control valves combined with a master thermostatic mixer placed on each battery of showers, which controls the hot water supply at bath temperature (108° to 110°), so that immediately upon opening the hot water valve one has bath temperature. We have used various kinds of individual shower mixers but find the system mentioned above much more satisfactory."

SHOWER ROOM FLOOR

"In the shower room tile is replacing concrete as the desired flooring. Several kinds of tile are suggested, including mosaic, granolithic, terrazza, and non-slip." (1) Non-slip qualities should be given very serious consideration.

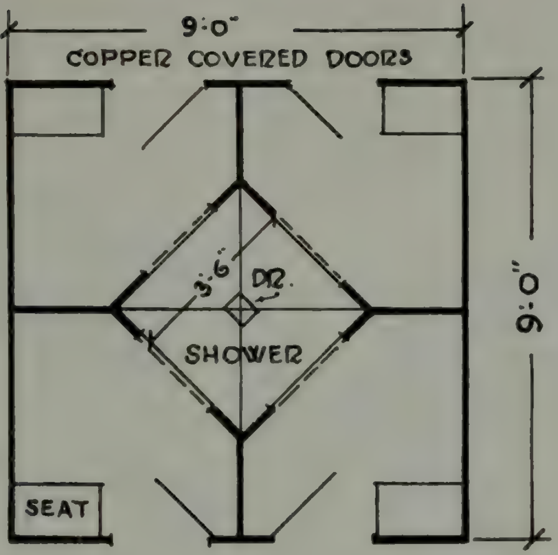
MECHANICAL EQUIPMENT

HEATING

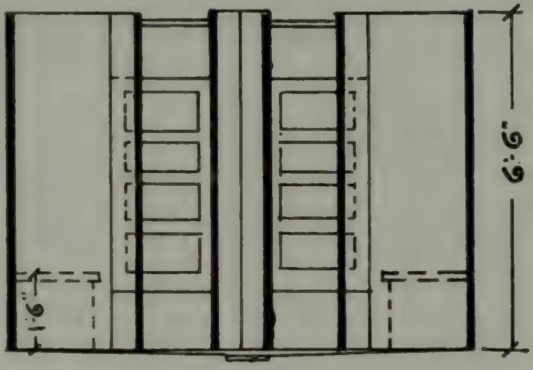
Gymnasium buildings have rather special heating requirements. The gymnasium room, courts and special exercise rooms should be kept at from 55° to 60° F., the shower and swimming pool rooms at 80° F., the locker rooms at 76° F., and the remainder of the building at 70° F.

The gymnasium section may require heat intermittently, while the other portions would require heat continuously. These portions are therefore often separated or zoned and controlled separately. The differential system lends itself particularly to the heating of this type of building, due to adjustability to zoning and the ability to closely balance the radiation to the heat losses by use of the regulating plates.

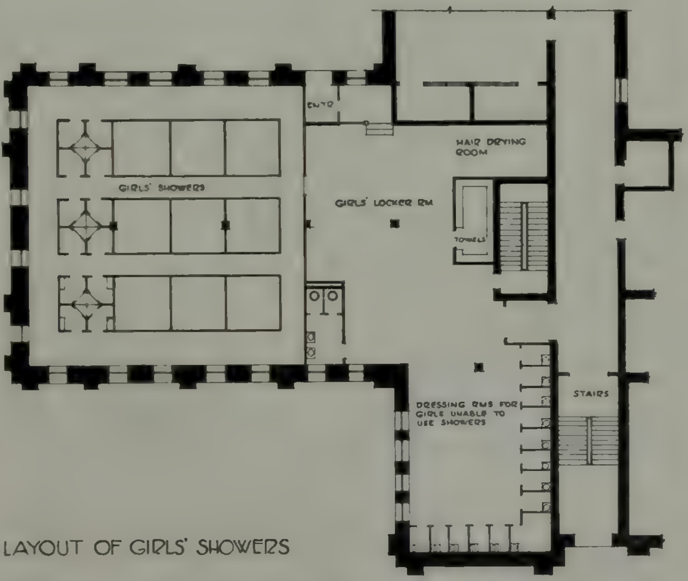
With the differential system, through changes from 5 pounds steam pressure to a vacuum of 15 inches or less, it is possible to vary the temperature of the radiator from 225° F. or higher for very cold weather or for rapid heating of a room to 133° F. for mild weather. This flexibility makes for comfortable and economical heating.



PLAN



SECTION
DETAILS OF SHOWERS



LAYOUT OF GIRLS' SHOWERS

GIRLS' SHOWERS AND DRESSING ROOMS
WHITE PLAINS HIGH SCHOOL, NEW YORK
STARRETT, AND VAN VLECK, ARCHITECTS

The gymnasium-auditorium of the Chicago Turn Verein is heated to only 50° by the direct radiators. The 70° required when used as an auditorium is obtained by the additional output of unit heaters, which are located on either side of the stage.

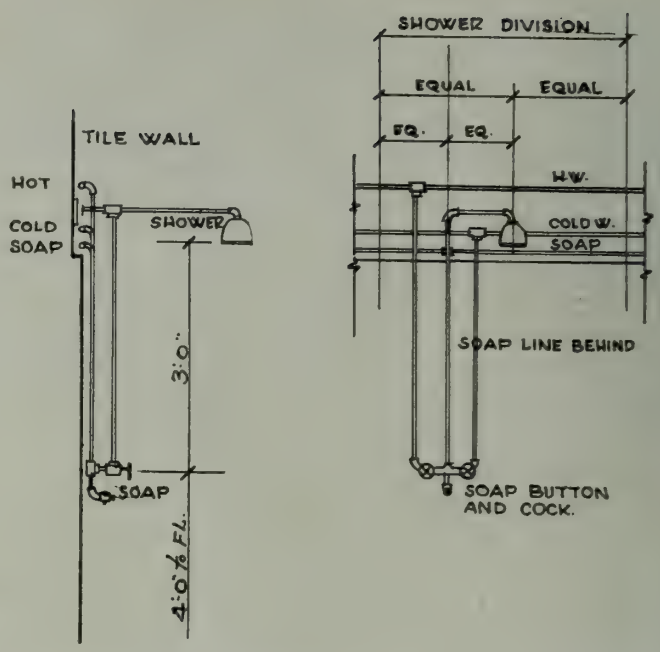
LIGHTING

"Lights must be so placed as not to glare into the eyes of users of the gymnasium or spectators at match games . . . Lights on the ceiling should be so placed as to avoid throwing shadows from the girders. They should be accessible without the use of a scaffolding or ladders. All lights should be recessed and covered with wire baskets securely fastened to wall or ceiling so that the impact of the ball will not shake the lighting fixture."

Light switches should be conveniently located to encourage turning off lights when not in use. In order to prevent boys playing with the lights it will be advisable to use key switches.

CUSPIDORS AND DRINKING FOUNTAINS

Cuspidors and drinking fountains should be provided on the walls of the gymnasium at several convenient points, depending on the size of the gymnasium. A set should be placed near the door leading from the locker room to the gymnasium as the men will want a drink when leaving; and the cuspidor will be needed as a place for the disposal of chewing gum when the men come on to the gym floor. The cuspidor should be a different color from the drinking fountain and they should both be recessed in the wall so as to avoid any chance of injury to players.



DETAILS OF SHOWER PIPING

PIPING

"All piping in the gymnasium should be in pipe chases. Canvassed asbestos covering is not satisfactory for pipes subject to contact in a gymnasium, as this covering is soon destroyed by rough usage." (10)

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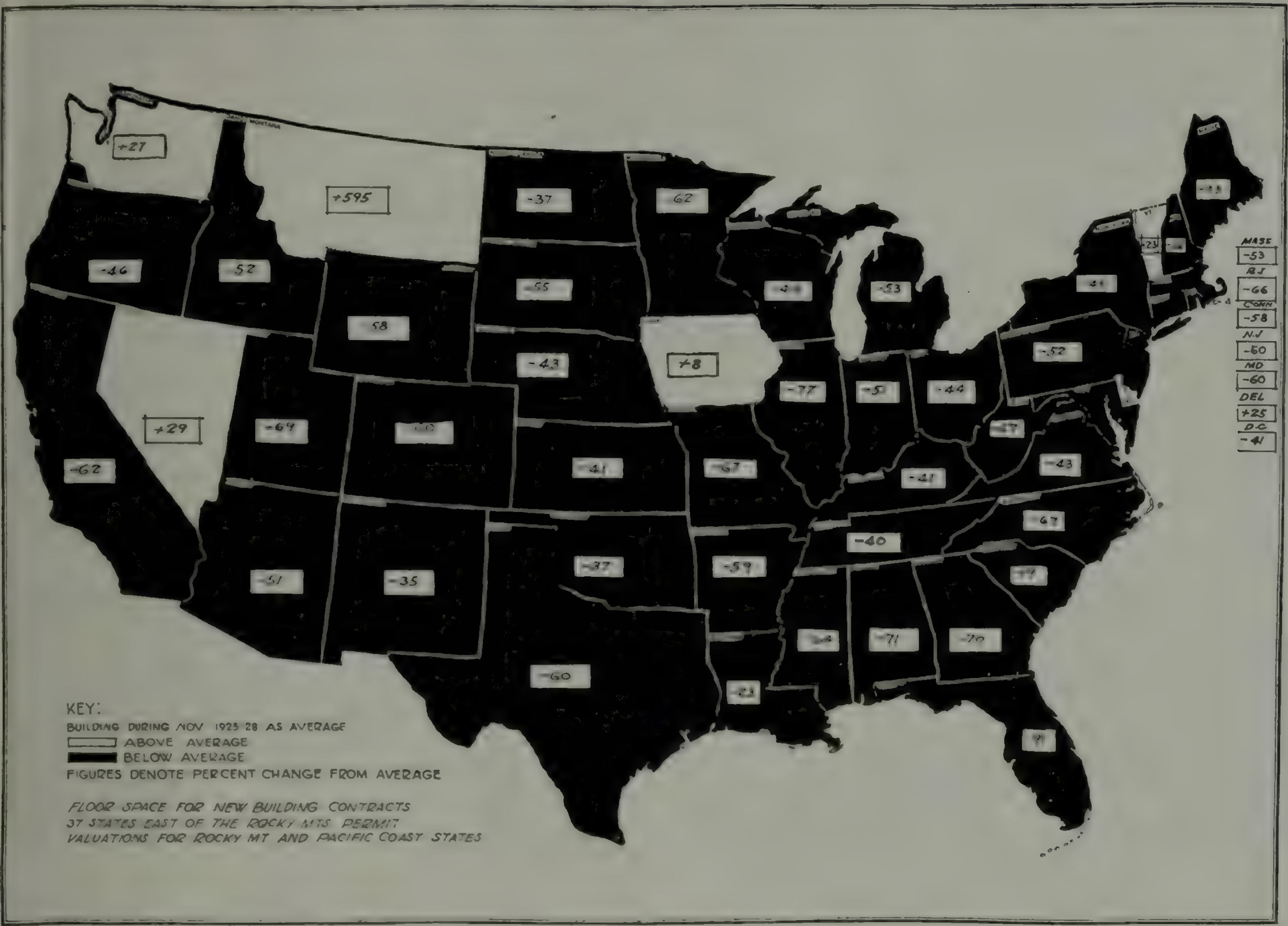
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R.I. -66
CONN -58
N.J. -60
MD -60
DEL +25
D.C. -41
KEY:
BUILDING DURING NOV 1925-28 AS AVERAGE
ABOVE AVERAGE
BELOW AVERAGE
FIGURES DENOTE PERCENT CHANGE FROM AVERAGE
FLOOR SPACE FOR NEW BUILDING CONTRACTS 37 STATES EAST OF THE ROCKY MTS. PERMIT VALUATIONS FOR ROCKY MT AND PACIFIC COAST STATES

The November building map revealed somewhat the same spottiness that has characterized earlier months with no important state exhibiting sustained ability to break out of the doldrums. Six states reported larger building volumes than average (November, 1925-1928): Vermont, Delaware, Iowa, Montana, Nevada and Washington.

BUILDING TRENDS AND OUTLOOK

THE INTERRELATIONSHIP OF THE BUILDING AND AUTOMOBILE INDUSTRIES

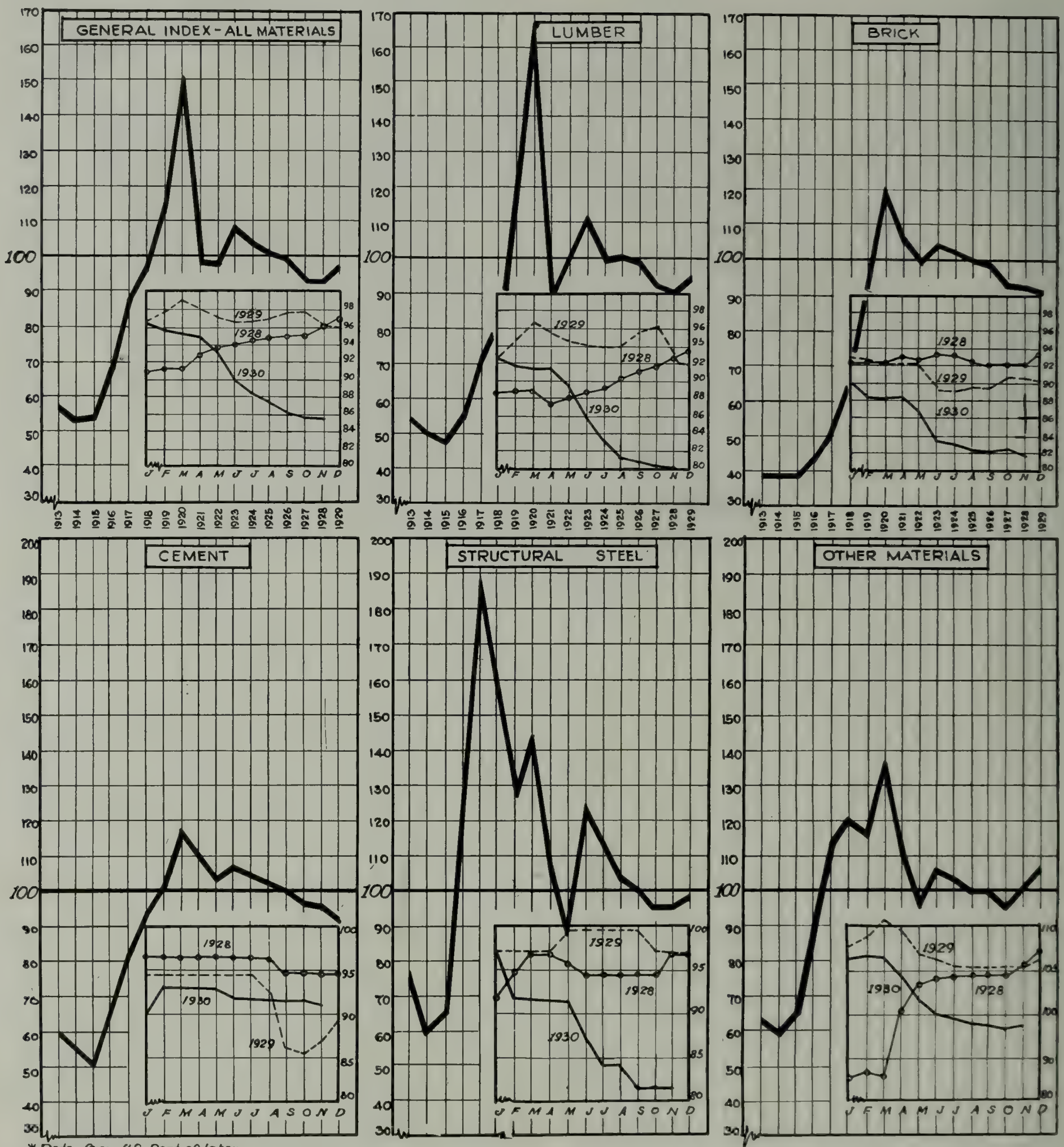
Each new mode of locomotion has strengthened the kinship between transportation and shelter, and the economic interdependence of one upon the other has never been so strong as it is today. Modern transportation numbers many instrumentalities of which the automobile is of large importance. Present-day shelter counts many facilities of which the dwelling is but one manifestation—the store, the office, the factory, the school are others.

Halt building activity in America, and business and industry of the nation is at once bridled. At least one out of every ten employed adults is normally gainfully occupied in construction processes or in the production of building materials and equipment. Stifle the automobile industry with its employment to at least half as many more and our industrial structure becomes undermined. Writing of this interrelationship in the Yearbook of the Construction Industry for 1928, the author stated: "Were the building industry to have sloughed at the time when automobile factories were shut down (in 1927) this condition might conceivably have signalized a depression in business. But the stability in the building industry and the high awards for new construction presaged ensuing activity as large at least as that previously recorded. Large building contracts meant large employment in the building trades and large demand for materials and equipment. Large employment in the building trades meant good markets for clothing, food, shelter, automobiles, radio, electric refrigeration. Good

(*Continued on page 92, advertising section*)

WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100



*Data from U.S. Dept of Labor

Building material prices, as measured by the general index of the U. S. Department of Labor, were fractionally lower in November than in October and showed an index about 11 per cent lower than in November a year ago. The level of material prices, however, was still above the index of general wholesale prices, which in November had shown a recession from a year ago of almost 15 per cent. Prices for lumber, brick and cement receded from the October levels, while structural steel remained unchanged and the index for other building materials showed a fractional gain. The most drastic decline from last year was recorded in the price of structural steel where the decrease amounted to 16 per cent; the decline in lumber prices was 13 per cent; for brick, almost 10 per cent; and for cement, only 5 per cent. The relatively small decrease in cement prices in the face of larger declines elsewhere was reflective of the demand of road building and other public works construction where cement is the principal material and where activity has been well maintained throughout the year.

Steele Chemistry Building, Dartmouth College, Hanover, N. H. Painted throughout with Barreled Sunlight

In one of Dartmouth's Finest Buildings

INTERIOR painted surfaces are conspicuously good looking, with a pronounced lustre, a rich depth . . . corridors, classrooms, laboratories are suffused with a soft, agreeable working light . . . walls and ceilings are immaculately clean . . . Dartmouth's Steele Chemistry Building is painted throughout with Barreled Sunlight.

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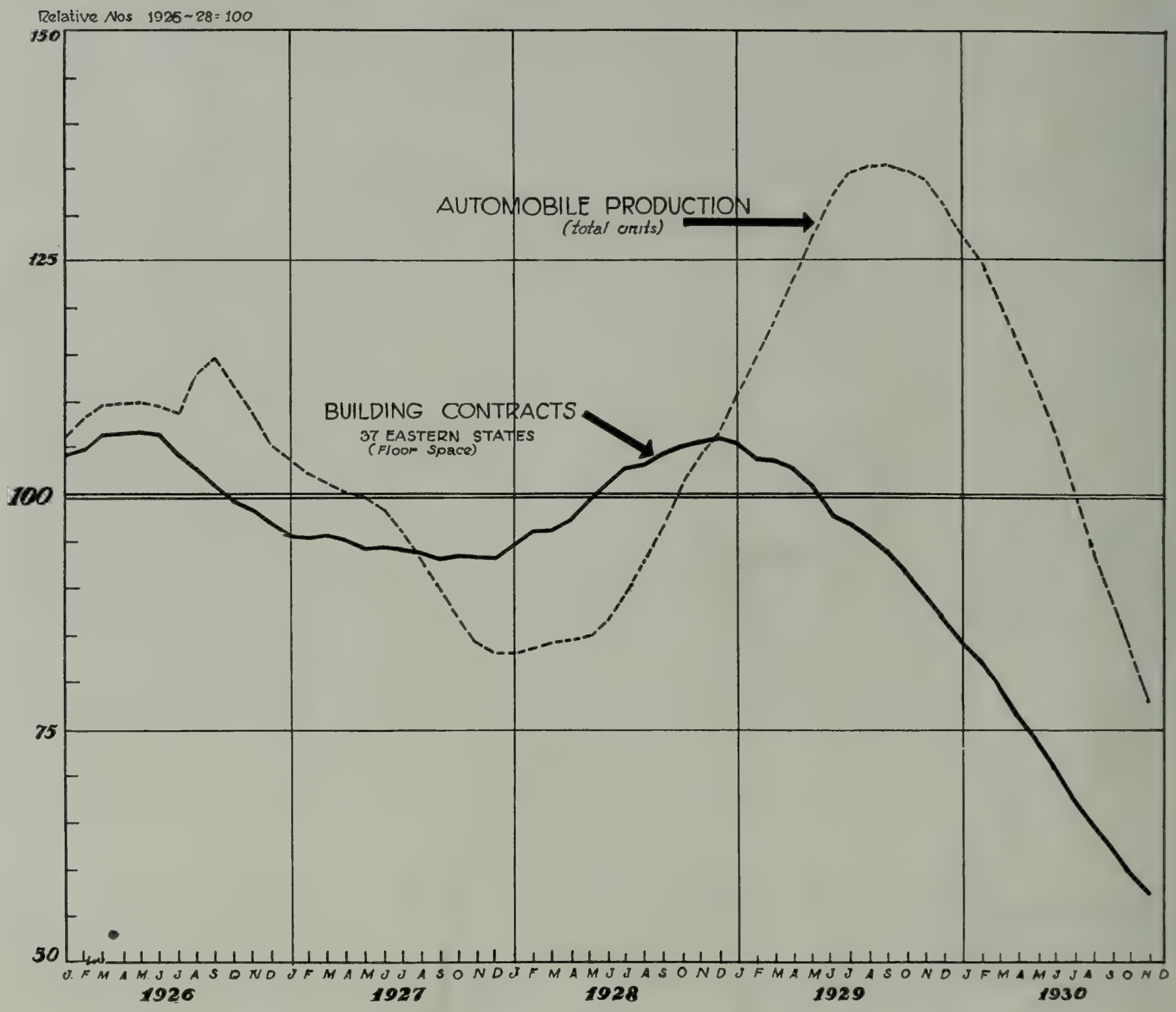
TREND OF BUILDING IN 37 EASTERN STATES

A comparison between the trend of building contracts and the trend of automobile production.



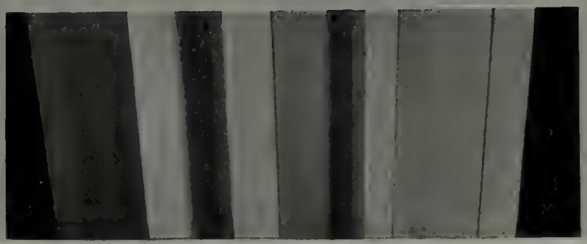
The prosperity of the decade which ended with the year 1929, was very definitely identified with the progress in two industries, building and automobiles. Just so long as the trend in both had been upward general business and industry were on the incline; when the trend of both was downward, a decline in business was foreshadowed. Major changes in the trend of building have preceded similar movements in automobile production.

The present decline in contracts awarded for new building, which was first evidenced in January, 1929, was a preliminary indicator of the impending major depression which is with us today. This indication was partially confirmed in August, 1929, and more definitely confirmed in September and October by the reversal in the trend of automobile output.

Going back to the year 1926 the trend in building awards disclosed at midyear a preliminary indication of decline. This was confirmed by a declining trend in automobile output in October of the same year.

For building the downward trend of contracts has now lasted two full years. For automobile production the decline has been unbroken for fifteen months. In the face of this it is not unlikely that the downward trend in automobile output will carry through for most of the months of 1931 if the lag between the building cycle and the automobile cycle manifested in 1926 and 1927 may be taken as a guide.

On the whole the year 1931, it now appears, will show new building volume not far different from that of the year 1930. Neither is it likely that automobile output, if manufacturers are as mindful of conditions of demand as now seems apparent, will show any material change for the entire year 1931 from the year that has just closed.



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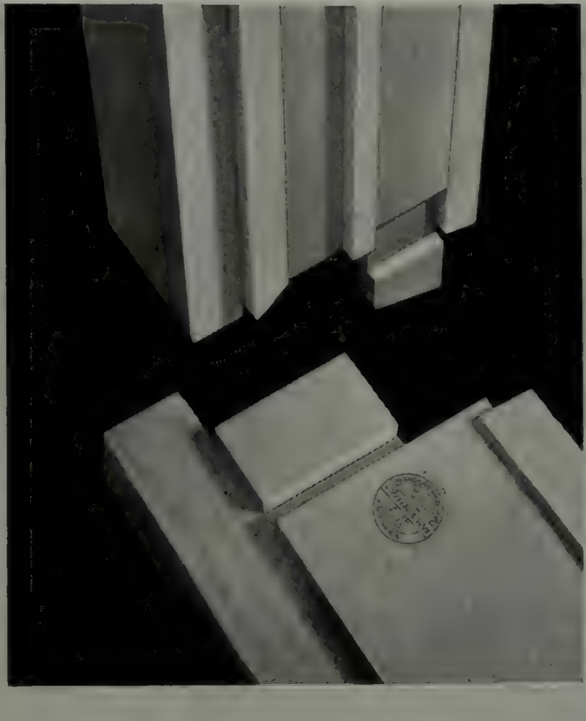
Newest Andersen patents give architect weathertight installation

FOR THE MODERN HOME or building, architects are turning to window and door frames of genuine white pine . . . made by Andersen . . . and now equipped with the new locked sill-joint, 3″ per foot sill slope, wide blind stop and other exclusive features. Notice how sill and jambs lock in place . . . accurate, rigid and leakproof.

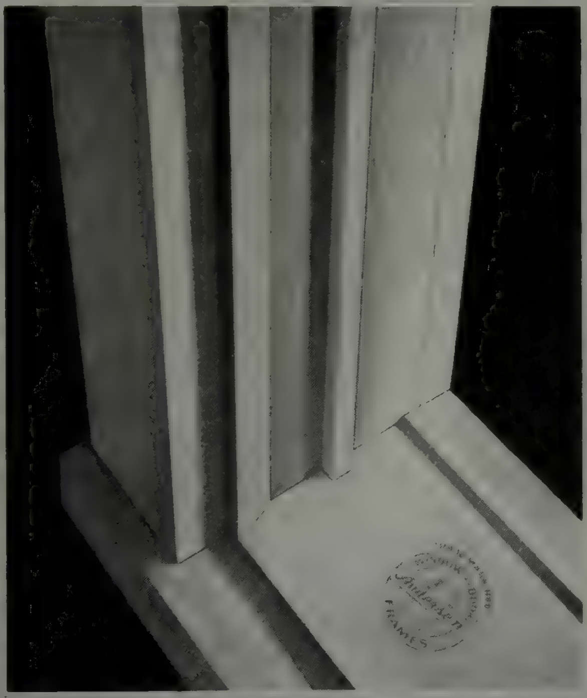
In Andersen's new Master Frame, the architect finds a high standard of accuracy, plus the patented details which insure a permanent, weathertight installation. Each frame is equipped with Andersen patented noiseless pulleys—guaranteed for a lifetime of noiseless, trouble-free operation.

Also, these new models, made to fit every architectural need, have a beauty never before attained in wooden frames.

Andersen Frame Corporation, Bayport, Minnesota . . . represented by 4,000 leading jobbers and dealers.



Photograph showing sill and jamb dadoes before joint is closed.



Click! Sill and jamb lock together—rigid, leakproof.

Andersen MASTER Frames

TRADE MARK REG.
WINDOW and DOOR
Andersen
FRAMES

See the 1931 Sweet's, B 2273 to 2292

(*Continued from page 91, editorial section*)

markets for these products meant large production schedules in the factories producing them. The relationship, direct and indirect, is almost infinite."

Together the automobile and building industries reflect two of the most important items in the balance sheet of business. Any basic change in the trend in either has a marked effect upon industrial and commercial equilibrium; any change in both has an effect on general business so potent as to more than offset the combined effect of many opposing movements of lesser importance in other sections of our economic scheme.

The building and automobile industries alone have accounted in recent years for about 35% of the entire domestic consumption of steel. Lumber, copper, lead, rubber, cement, in greater or less degree, depend heavily upon the health of the building or automobile industries or both, to say nothing of artificial leather, lacquers, paints and the thousand and one other commodities which, when assembled, become the dwelling, the theater, the sedan, the truck. The utilization of basic materials by each of the two industries is not materially dissimilar, except as to formulas for their compounding. Cement and rubber are the only important exceptions and they are predominantly materials for one or the other.

The present decline in contracts awarded for new building, which was first evidenced in January, 1929, was a preliminary indicator of the impending major depression which is with us today. This indication was partially confirmed in August, 1929, and more definitely confirmed in September and October by the reversal in the trend of automobile output. What has happened since in the building and automobile industries and general business itself is now commonplace.

Going back to the year 1926 the trend in building awards disclosed at midyear a preliminary indication of decline. This was confirmed by a declining trend in automobile output in October of the same year. It will be recalled that general business during the closing months of 1926 was taking a breathing spell only to decline during the ensuing year which has since been recorded as one of mild depression. That business could have been seriously upset by the decision of one large automobile manufacturer to shut his plants for the change of models during 1927 is evidence not only of the importance of the automobile industry to economic well-being but even of the fineness of adjustment that exists between the many economic mechanisms that are as so many parts requiring proper lubrication.

For building the downward trend of contracts has now lasted two full years. For automobile production the decline has been unbroken for fifteen months. In the face of this it is not unlikely that the downward trend in automobile output will carry through for most of the months of 1931 if the lag between the building cycle and the automobile cycle manifested in 1926 and 1927 may be taken as a guide.

On the whole the year 1931, it now appears, will show new building volume not far different from that of the year 1930. Neither is it likely that automobile output, if manufacturers are as mindful of conditions of demand as now seems apparent, will show any material change for the entire year 1931 from the year that has just closed.

The inventory position as respects the ultimate market is still pretty much the same for both building and automobiles. Markets for new building and automobiles are still dependent upon conditions of consumer demand and supply. Investors in building enterprises, whether it be dwellings, apartments, theaters or office buildings, are still overstocked to some extent. Defaults in interest payments on first mortgages are large. The consumer of automobiles is likewise somewhat overstocked in the light of present disturbed economic conditions. The old car may have to do some further double duty, excepting in cases of absolute replacement necessity and the well-to-do owners who have habitually traded their cars from year to year.

This brings us to a further analysis of the probable effect of curtailed automotive output upon new building. In 1930 the construction of garages, automobile factories, and the larger service stations approximated $100,000,000 for the entire country; it is probable in the light of a sluggish year for automobiles that a very substantial decrease from this figure will be registered in 1931. Thus the interdependence between the two industries becomes at once apparent.

The automobile brought with it a demand for new and ever better roads and highways; new building activity provided large employment to building artisans at high wage levels; incomes thus derived were used in the purchases of automobiles, among other comforts and necessities, dwellings, furnishings and the like. Good roads, automobiles, large incomes made possible real estate subdivisions and housing developments in our suburban areas.

Since it appears that in the field of new residential building the trend is in the direction of larger apartment houses in urban centers—though the single dwelling still is an important factor in housing—the elevator may become in effect a more important competitor of the automobile—a case of vertical transportation against horizontal locomotion. This development when it comes will bring a new freedom in architectural design, a fuller appreciation of the economics of materials and construction, and a closer approach to functional requirements of buildings.

It is indeed a far cry from the Phoenician sloop to the automobile, but each mode of transportation within extremes so far apart has brought measurable changes in our living habits. If the airplane or dirigible will become as commonplace as the automobile our offices, stores, dwellings will be quick to mirror the new order and our cities will take on skylines far different from those we know today.

L. Seth Schnitman

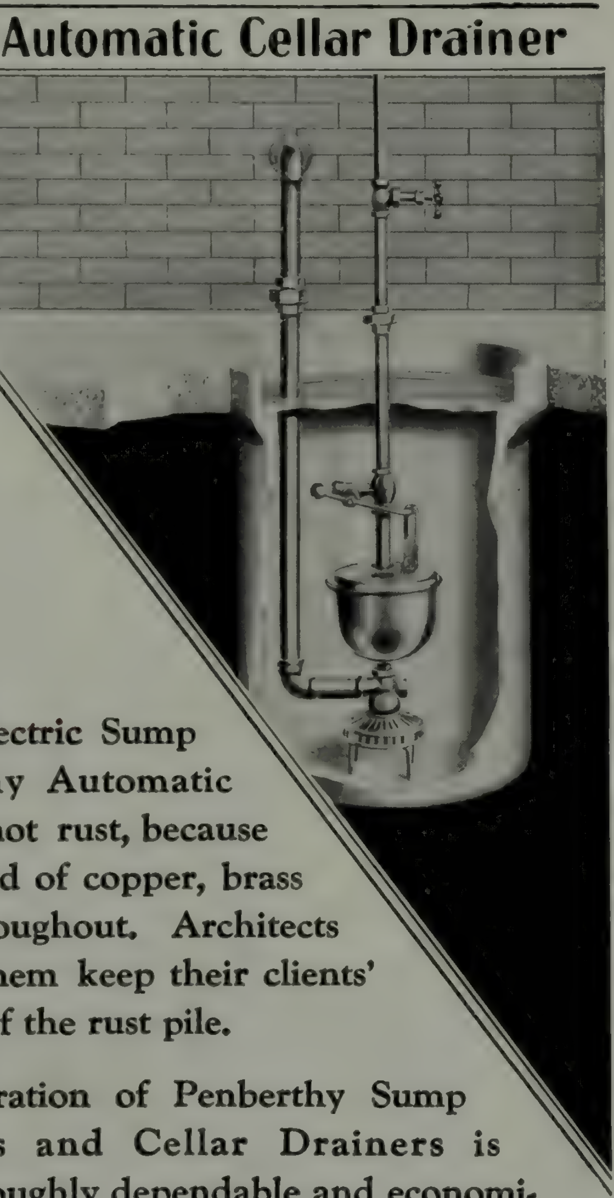
A$600,000,000 Waste!

Are you responsible for a part of it?

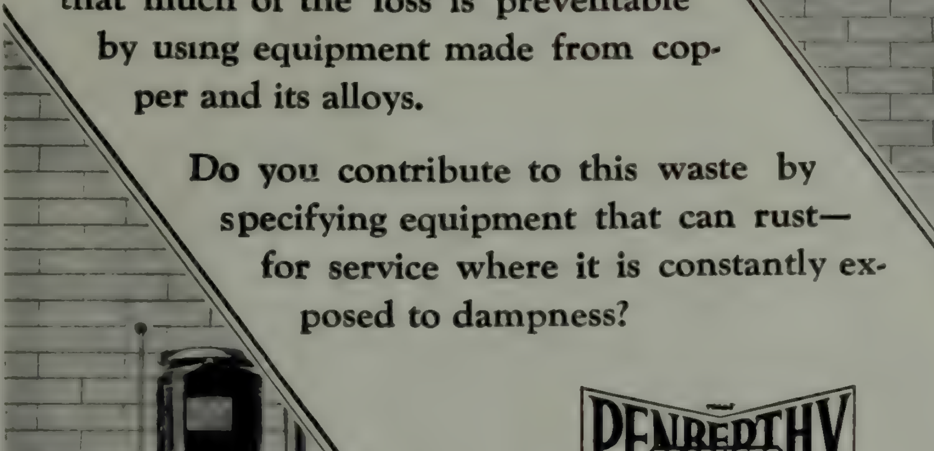
The annual loss in the United States due to rust is estimated at $600,000,000. This figure is appalling—particularly when you realize that much of the loss is preventable by using equipment made from copper and its alloys.

Do you contribute to this waste by specifying equipment that can rust—for service where it is constantly exposed to dampness?

Penberthy Automatic Cellar Drainer



PENBERTHY PRODUCTS



Penberthy Automatic Electric Sump Pump

Penberthy Automatic Electric Sump Pumps and Penberthy Automatic Cellar Drainers cannot rust, because they are constructed of copper, brass and bronze throughout. Architects who specify them keep their clients' dollars out of the rust pile.

The operation of Penberthy Sump Pumps and Cellar Drainers is thoroughly dependable and economical. There is a size and type for every drainage requirement.

These Penberthy Pumps are quickly available—they are carried in stock by the leading jobbers throughout the country.

PENBERTHY INJECTOR COMPANY

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NOTES IN BRIEF

A LETTER:
FAMOUS ARCHITECTS

The Editor:

The letter* from Professor Joseph Hudnut to President Ricketts of Rensselaer Polytechnic, naming a list of the ten best architects of the United States, has in it an idea of much interest, one sure to provoke much discussion and no decisions—for concerning tastes there is no disputing. But I note with mingled feelings of awe and sadness the list suggested. I am properly impressed by the didactic finality of the professional utterance, but gaze on the list with grief. It is exactly what the teachers, most of them, would have us believe; but bless them, we have our own secret reservations. I note even that a necessary concomitant to being placed on the list is a state of death—maybe it should be phrased "suspended animation." Much could be said on this matter alone, but it seems to me at best a list definitely dated *fin de siecle*—to subscribe in which one must have died mentally in '99.

Let us go back to '99 if you wish. The Brochure Series came out in that year with new and modern ten best buildings, selected by the then architects, preening itself on the improved standard shown over a previous list of 1885. The list of the buildings and their authors is not of special interest but their definition of the mark of genius is—and can be just as well applied today—that "each of the buildings represents a conception clearly thought out, simply and forcibly expressed and treated with monumental dignity irrespective of decoration."

To my mind such a definition taboos office organizers—such as Burnham and his modern parallels like Albert Kahn, than whose office few can do better—it should also shunt out of the single track mind anyone who is not primarily a designer.

We must not put on our list younger men no matter how good—Grant Simon and Harry Sternfeld of Philadelphia, Burnham Hoyt of Denver, young Root and Holabird of Chicago, David Adler also of Chicago, and innumerable others: for theirs is still to do. We must keep out all house designers and small town men—those flowers doomed to waste their sweetness on the desert sticks; for of their works who is familiar enough to praise?

So here is a list, properly nominated for this "Hall of Fame"—by their good works will they be known. First the ancients—

McKim: concerning whom naught can be said but praise.

H. H. Richardson: an early master of the late Victorian period; a master in design, he helped formulate the American program.

(*Continued on page 96*)

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* In the October, 1930, issue of The Record, page 98 (adv.).

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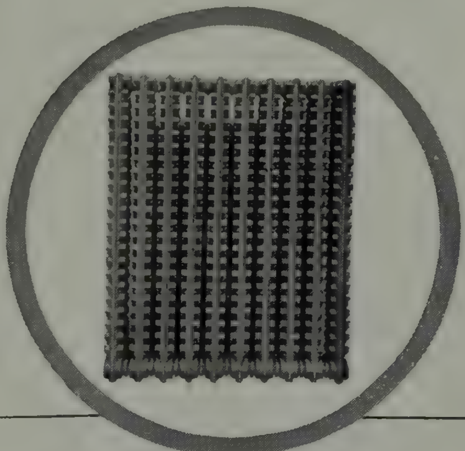

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Sullivan: who to his honor fought a single-handed battle; ridiculed in his day, his architecture is now seen fraught with a strange beauty based on solid precepts.

Stanford White: whose work touched genius; who while working in a single style inspiringly modified it by his splendid feeling for the beautiful.

And the later men, some of whom still live to do more and better work—

Paul Cret: designer of the Pan-American Union, Detroit Art Museum, Rodin Gallery and other masterpieces; master-designer, master-teacher, whose genius has fired innumerable pupils; a modern in spirit yet in full touch with inspiration of earlier generations.

Milton Medary: past president of the A.I.A.; designer of Valley Forge Chapel, Bok Tower and other great works; who combined the genius of the designer with an infinite capacity for taking pains.

Frank Lloyd Wright: designer of the Imperial Hotel at Tokyo, Canberra in Australia; a thinker of first water, more honored abroad than at home; his architecture is sincere and truly his own.

Claude Bragdon of Rochester: delver into the mysteries of projective ornament, designer of stage settings for the "Miracle" and other romantic works; inspirer of creative endeavor.

Edgarton Swartwout: designer of the Elks Memorial, Missouri State Capitol; a man who single-handed and with no office organization carried out great buildings; truly answering the requirements that the architect be entirely responsible for works bearing his name.

Eliel Saarinen: now living in this country; a man of original thought and great force whose work sanely illustrates the imaginative conceptions of his generation.

And as substitutes on this line-up, we have waiting on the bench a list which cannot be all-inclusive—fit men like Goodhue, Mulgardt of San Francisco, Cram of Boston, Hood of New York, Delano or Aldrich (I don't know which, maybe both) John Russell Pope, Hirons, Platt, Aymar Embury who built a whole town at Southern Pines: all designers of the works credited to them. Maybe there are some more keystones on which their names could be inscribed.

I would make a final suggestion—that if the scheme is adopted let the Regents provide in the main hall suitable niches wherein the works of these men are shown: the drawings made by themselves, the photographs by Sigurd Fischer; so that not only by their names will they be known, but also by their labor. Then truly will their genius greatly inspire the rising youth; then will creative endeavor be marked with a white stone; then will their names be praised for works accomplished.

Yours very truly,

Frederick A. Muhlenberg, A.I.A.

NEWS

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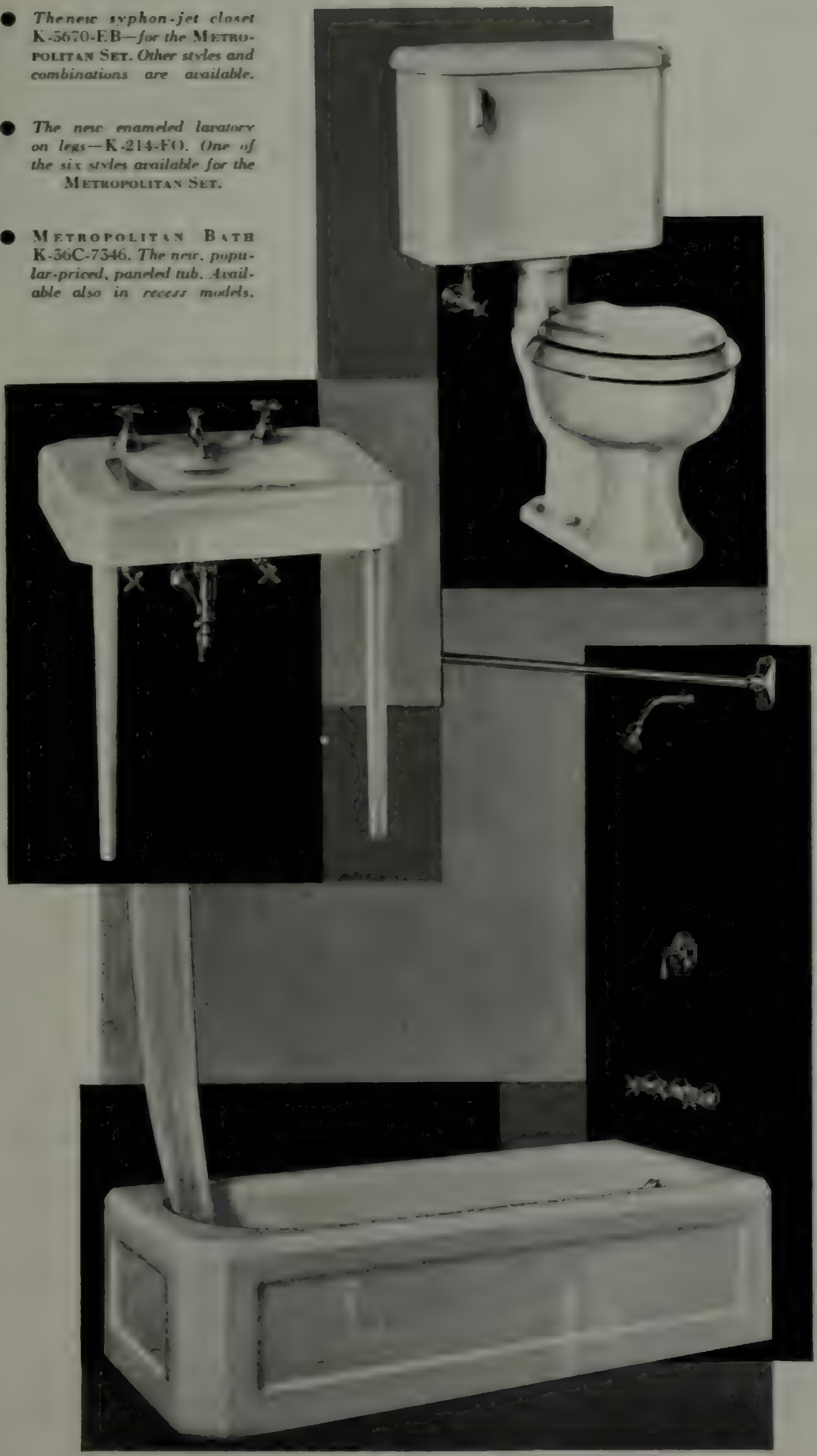

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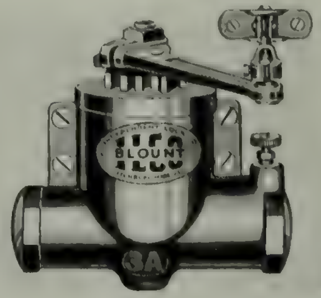

ARCHITECTURAL AND ALLIED ARTS EXPOSITION

A more comprehensive idea of the evolution and development of works of art than is ordinarily presented at exhibitions of architecture and its kindred arts will be shown in the crafts and other exhibits at the Architectural and Allied Arts Exposition at the Grand Central Palace next April. At the forthcoming exposition efforts will be made to plan exhibits so that the public will see recorded the development of an individual piece of art from the initial sketch until its final stage as a finished work and also to trace the history of the industry as a whole by means of pictures and old and modern examples of craftsmanship.

Recognition of the relationship between architecture and its sister arts of painting and sculpture to the crafts has gained considerable momentum since the craftsmen of the decorative arts were first invited to participate in the annual exhibits of the Architectural League of New York under the presidency of Grosvenor Atterbury a few years ago. By exhibiting the decorative arts alongside the fine arts, the League has given expression to the alliance of all the arts as exemplified in its governing personnel. The organization provides that its president and four vice-presidents shall be, respectively, an architect, a mural painter, a sculptor, a landscape architect and a craftsman.

The crafts will constitute a significant part of the big exposition to be held in April under the auspices of both the Architectural League of New York and the American Institute of Architects. It is the fourth biennial event of its kind, in each of which the decorative arts have occupied positions of importance with comprehensive exhibits in metal, glass, ceramics, textiles and other materials.

THE JAMES HARRISON STEEDMAN MEMORIAL FELLOWSHIP IN ARCHITECTURE

The Governing Committee of the James Steedman Memorial Fellowship in Architecture announces the sixth competition for this fellowship.

This fellowship represents an award of $1,500 for foreign travel. The competition is open on equal terms to all graduates in architecture of recognized architectural schools of the United States. Such candidates must be American citizens of good moral character, and shall have had at least one year of practical work in the office of an architect practicing in St. Louis, Mo., before being entitled to assume the benefits of the fellowship. All candidates shall be between twenty-one and thirty-one years of age at the time of appointment.

Application blanks for registration can be obtained at any time upon written request addressed to the head of the School of Architecture of Washington University, St. Louis, Mo., to whom application blanks properly filled out must be returned not later than January 24. Any requests for supplementary information relative to the rules and regulations governing the competition shall be made at the same time.

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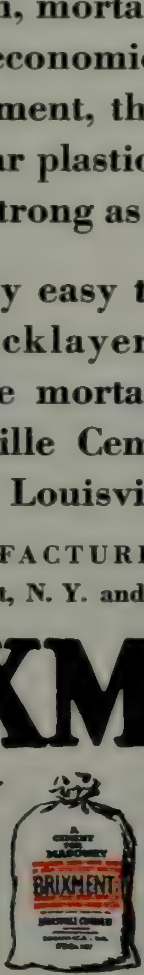

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LE BRUN TRAVELING SCHOLARSHIP COMPETITION

The Executive Committee of the New York Chapter of the American Institute of Architects announces a competition for the selection of a beneficiary for the traveling scholarship founded by Pierre L. Le Brun. The program will be issued about January 15, calling for drawings to be delivered about March 15.

The award is $1,400 to be used in paying the expenses of an European trip lasting not less than six months. The conditions state that "any architect or architectural draftsman, a citizen and resident of the United States, not under twenty-three or over thirty years of age, who shall, for at least three years, have been either engaged in active practice, or employed as an architectural draftsman and who is not and has not been the beneficiary of any other travelling scholarship, shall be eligible to compete."

All those wishing to enter the competition should arrange at once for nomination by a member of the American Institute of Architects. Nomination blanks can be obtained from the secretary of any chapter, A. I. A., or from the LeBrun Scholarship Committee. Nominations should be sent, so as to be received before January 15, 1931, to LeBrun Scholarship Committee, Room 530, 101 Park Avenue, New York City.

BOOK REVIEWS

AMERICAN THEATRES OF TODAY, Vol. II. R. W. Sexton. *Architectural Book Publishing Co.*, N. Y., 1930. $13.50.

This is a continuation of Sexton's earlier volume on American Theatres. Additional layout data are offered and also worthwhile information on acoustics, heating and ventilating. The illustrations are representative of the current theatre which is neither modern nor traditional. Theatre architects have produced a type, generally redundant with decoration, both outside and within. Our theatres are fairly well planned. The charts, plans and sections make the book of value to architects concerned in theatre design.

SWEET'S ARCHITECTURAL CATALOGS, 1931 Edition. *F. W. Dodge Corp.*, N. Y.

Sweet's in its new edition totals over six thousand pages of information on building materials, equipment and specification data. The value of this publication has been multiplied because of its greater completeness, due to the inclusion of entire catalogs of manufacturers. The appearance of the catalogs has been freshened by new covers in green and yellow. A summary of the main subjects covered by Sweet's is listed on the back to save time for draftsmen and architects.

View of elevator lobby, Richfield Oil Building, laid with Goodyear Rubber Flooring

Richfield Oil Building, Los Angeles, Cal.; Morgan, Walls & Clements, Architects; P. J. Walker Co., Builders; 31,000 sq. ft. Goodyear Rubber Flooring laid by Barker Bros., Inc.

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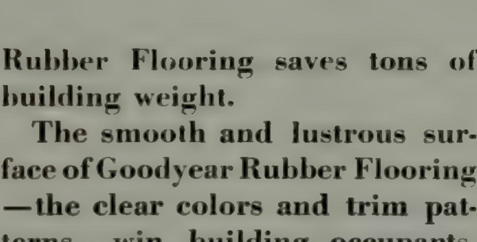

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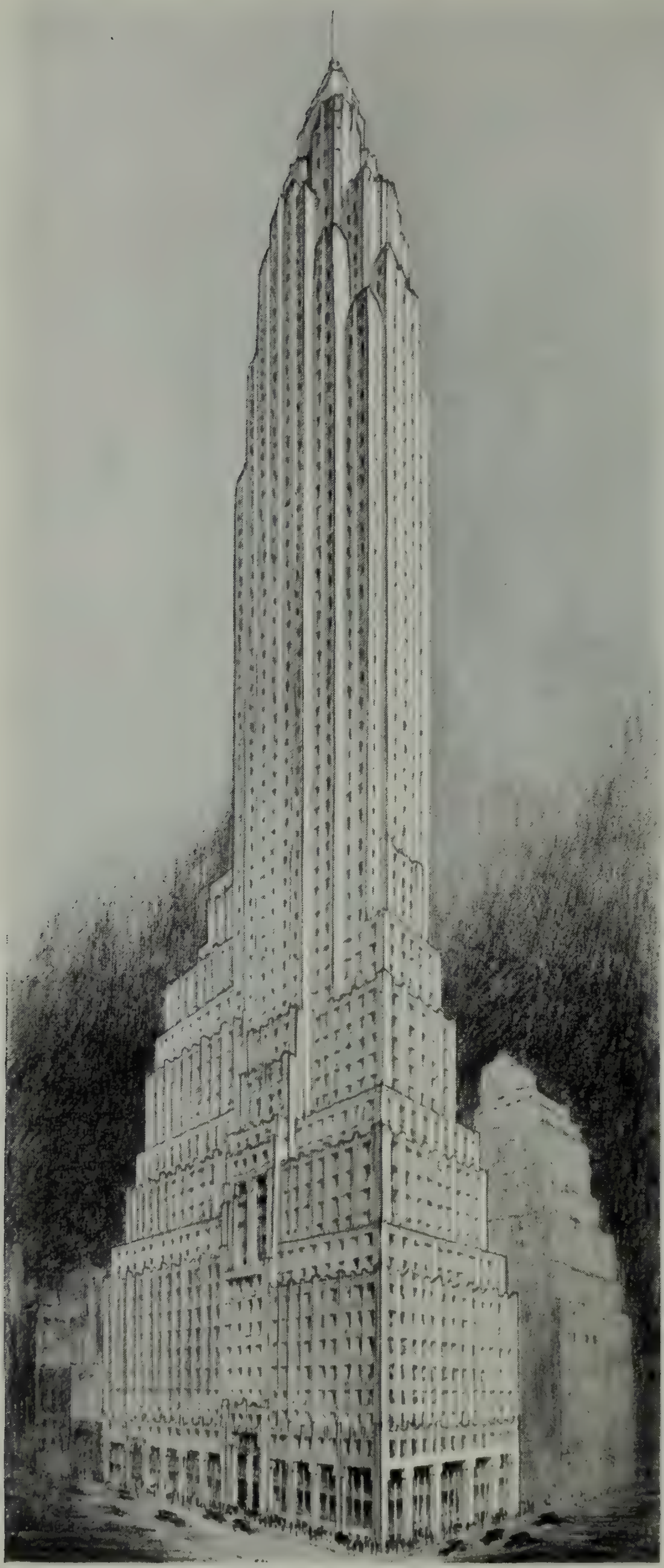

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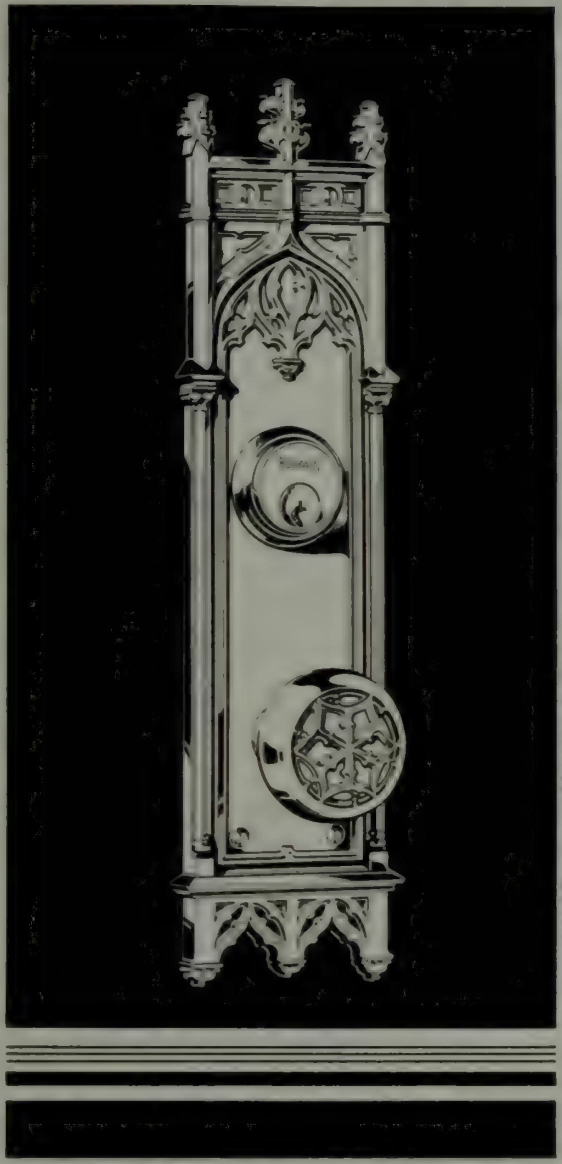

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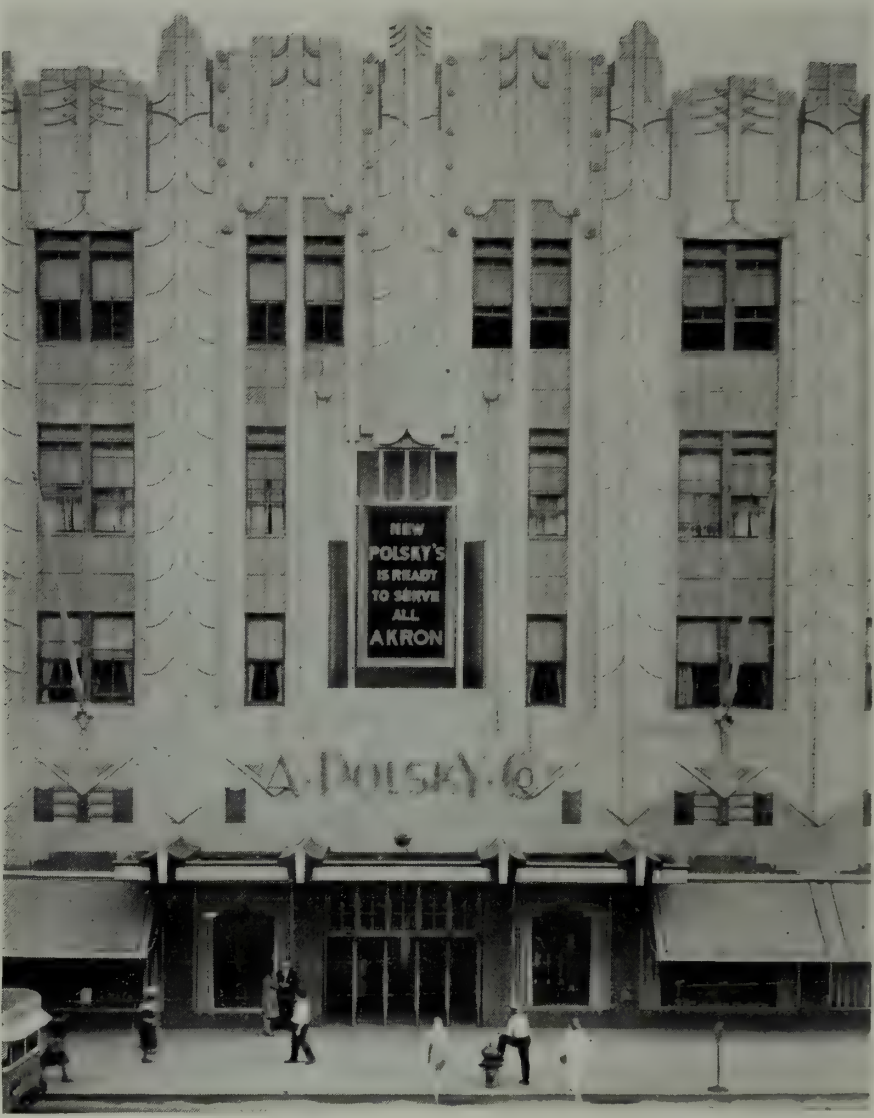

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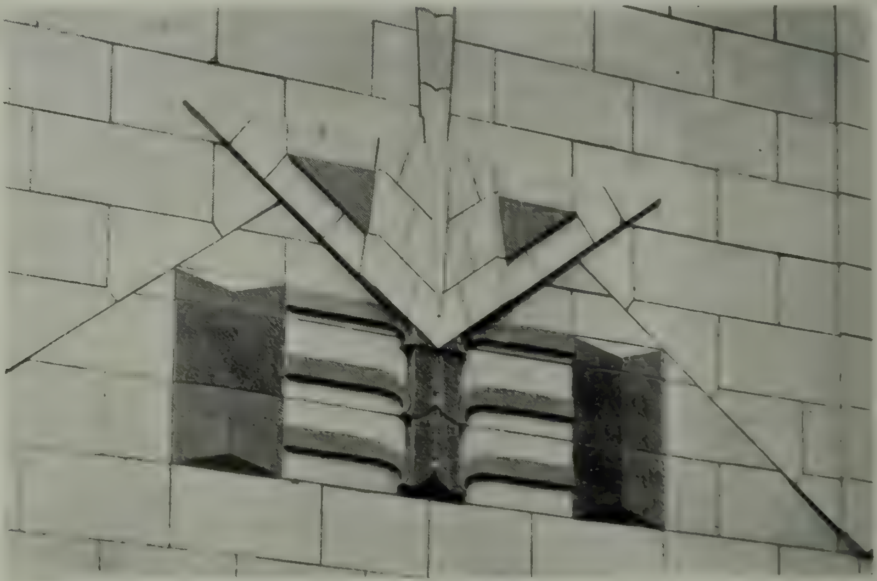

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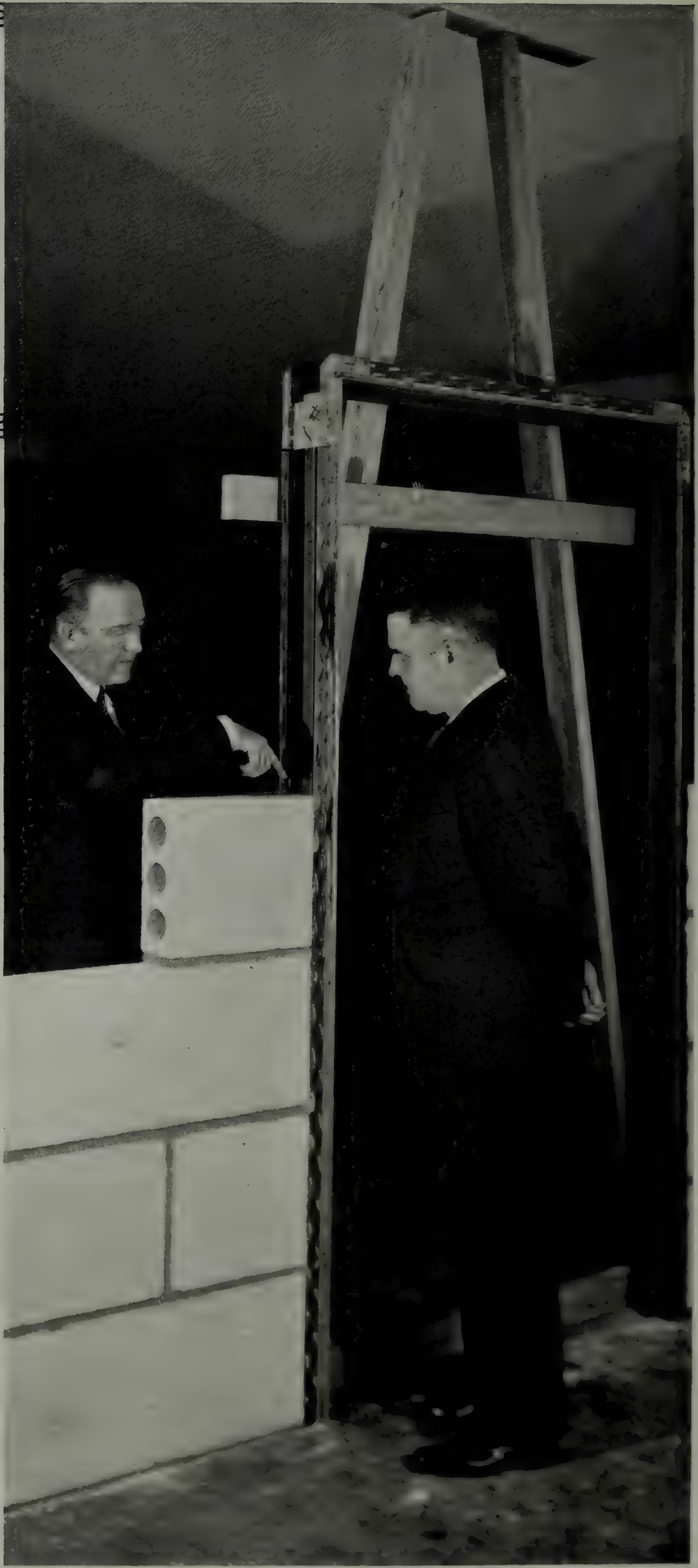

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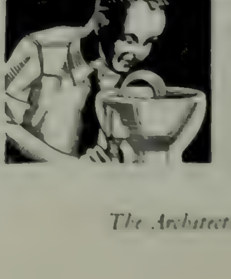

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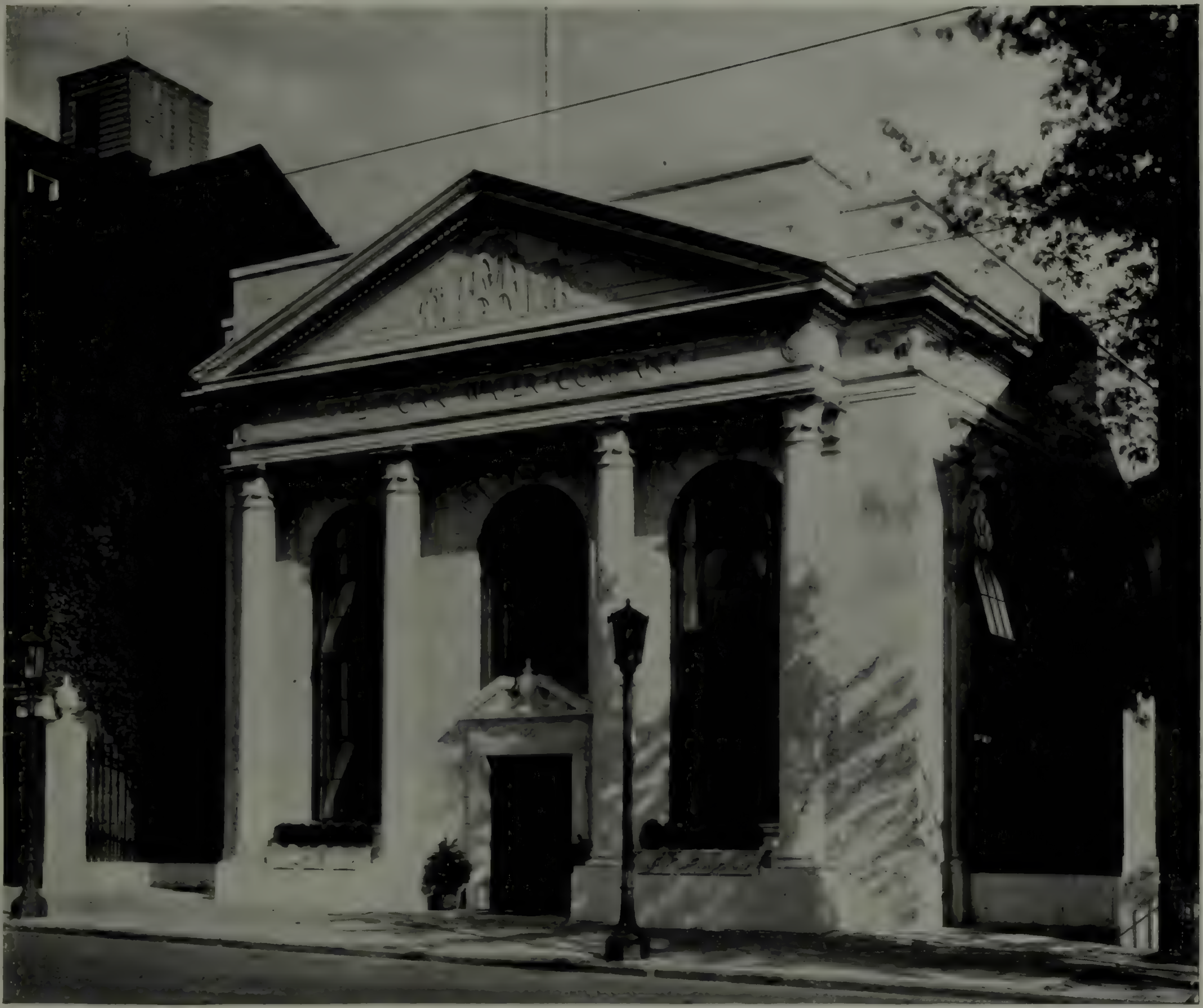

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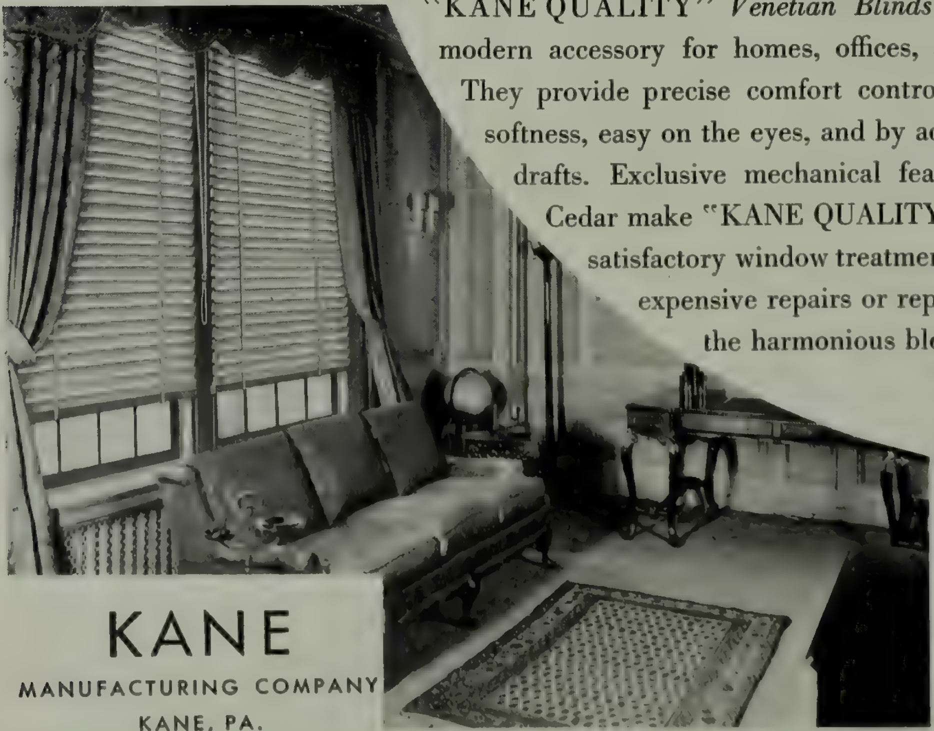

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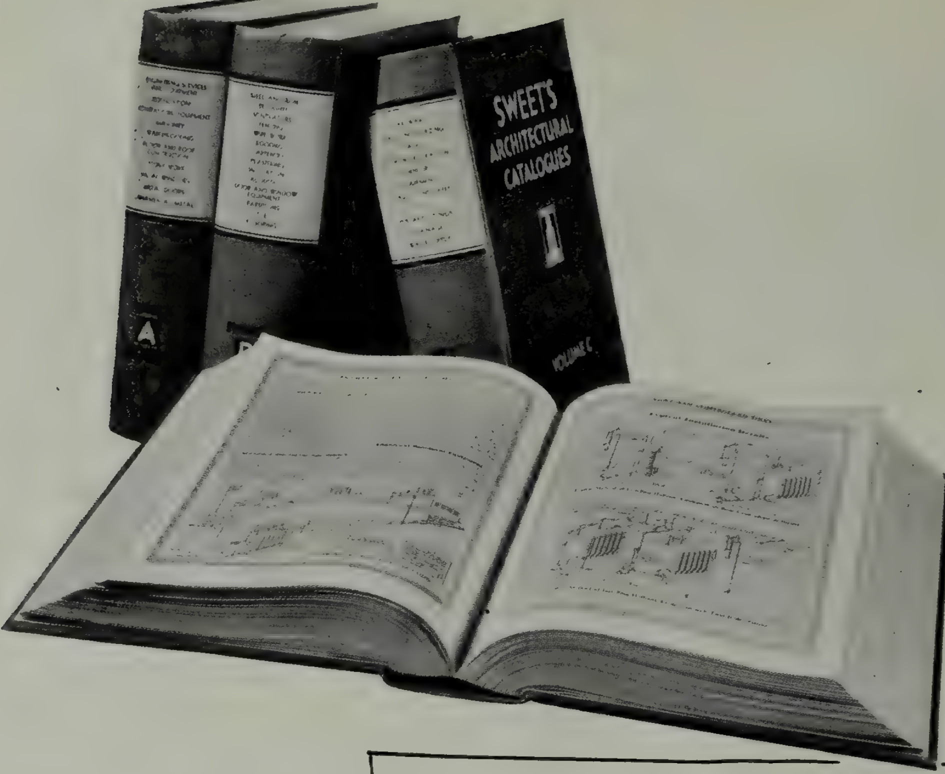

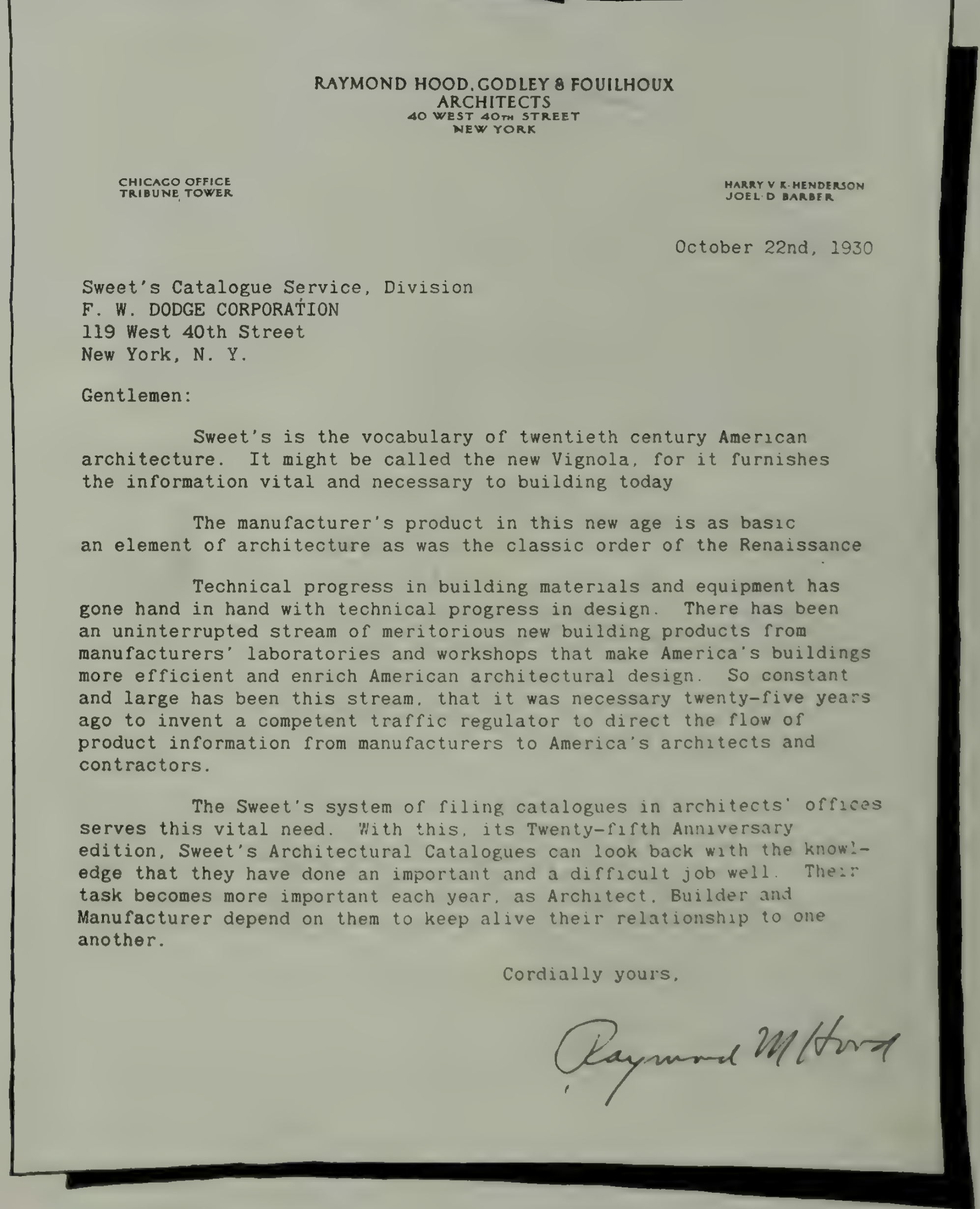

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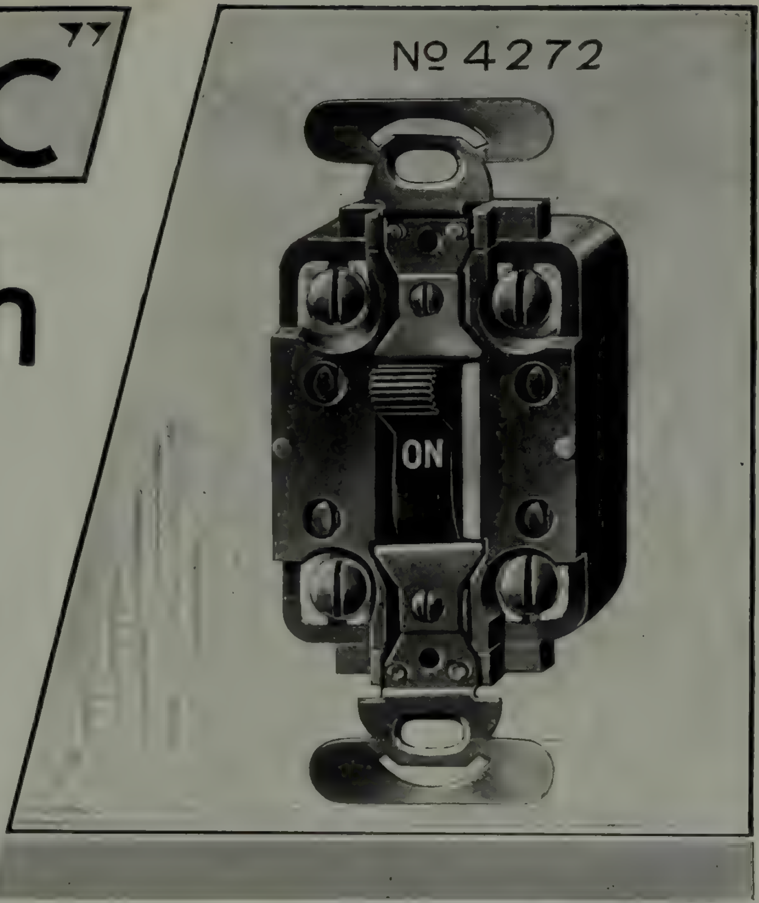

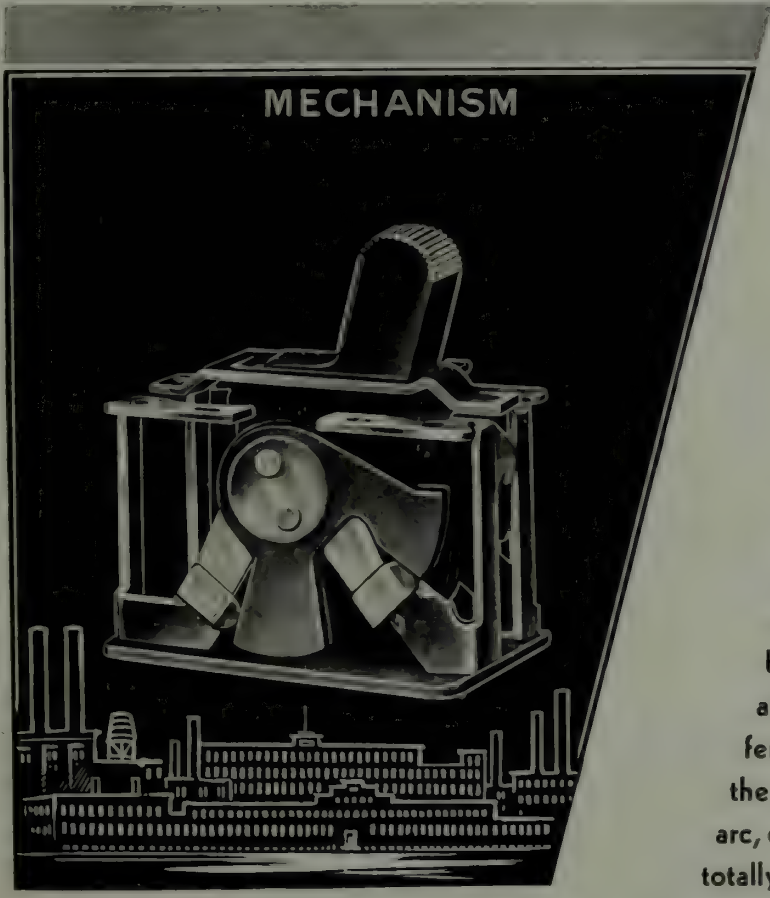

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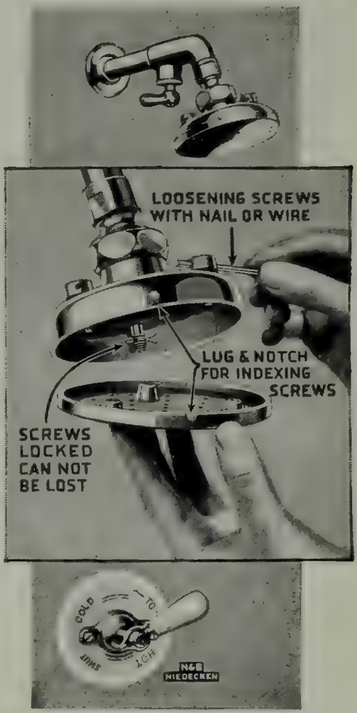

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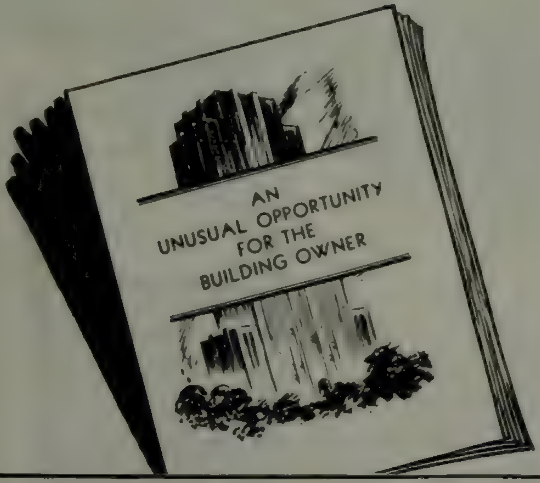

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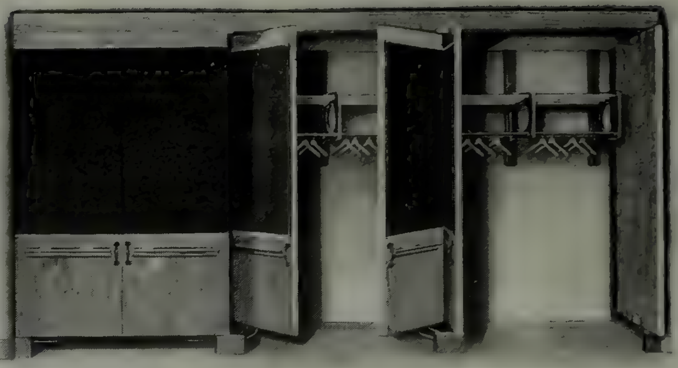

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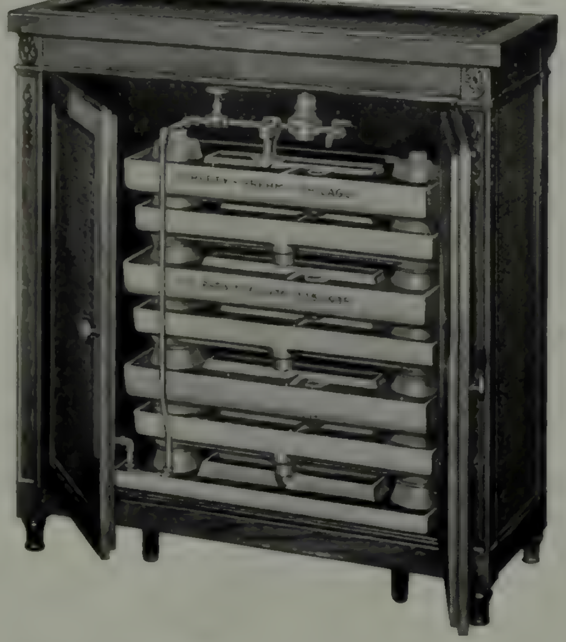

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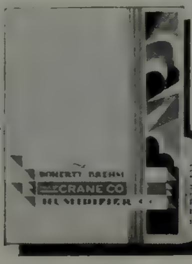

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FRANK IRVING COOPER began his independent architectural career in Pittsburgh in 1890 with George Westinghouse for client. In 1892 Taunton, Mass., his home city, employed him as architect for the Bristol County Court House, there located. Since then his main office has been in Boston.

In 1914 he organized the Frank Irving Cooper Corporation. The members of this firm besides Mr. Cooper are, Ralph G. Stebbins, M.I.T. 1906 and John W. McCoubrey, who have been with Mr. Cooper for twenty-five years. Gregory Cooper, Harvard Architectural School, is now the junior member of the firm.

Public and educational planning have been the chief work of the Cooper Corporation, which has designed many public halls, administration buildings, college groups, dormitories and about two hundred school buildings in New England and elsewhere. Of special note are the two High Schools in Hartford, Conn., Weaver and Bulkeley, costing $1,500,000 and $1,800,000 respectively, and the remodeled High School group in Somerville, Mass., costing $1,250,000, which was largely new construction. In Massachusetts important High Schools have been planned for Adams, Arlington, Attleboro, Beverly, Brockton, Lexington, Longmeadow, Malden, Peabody, Quincy, Rockland, Stockbridge, Somerville, Templeton and Wakefield; in Rhode Island the splendid Colt Memorial High School in Georgia marble and bronze; in Connecticut High Schools in Hartford, Enfield, Stratford, Simsbury and Norwalk; in Vermont, the Bennington High School, and in New Hampshire High Schools in Lancaster and Claremont; with many intermediate schools throughout the Eastern States. In 1929 the National Education Association selected the Cooper Corporation as architect for its new Administration Building in Washington, D. C., now nearly completed.

Bristol County Court House, Taunton, Mass., a commission executed in 1892 by Frank Irving Cooper

Not a small portion of the achievements of the Cooper Corporation has been in advisory work. Mr. Cooper has been employed as consulting architect in many cities of the Middle and Eastern States. He was a member of the Special Committee appointed by the United States Surgeon General in 1928 to plan the new system for the betterment of the heating and ventilating of the Senate Chamber and House of Representatives in the Capitol at Washington. He planned and made a number of models of school houses for the United States Department of Education for the Congress of Hygiene and Demography at Washington. He also made models of school houses for the Canadian Government. Eleven of Mr. Cooper's school houses were selected by the Argentine Government for the Museum at Buenos Aires. At the Jamestown Exposition a gold medal was awarded him for his exhibit. He made for the State of Massachusetts other models of school buildings.

The advisory work with reference to school buildings has had fullest value in the researches undertaken by the National Education Association Committee on the Planning and Construction of School Buildings, of which Mr. Cooper was Chairman. The report of this committee based on scientific analyses of two hundred and fifty school houses throughout the country, selected by educators, is now the standard for school house planning and construction.

The story is not complete here, for the Studio at Wayland, Mass., has had important influence in various lines of development in school house matters. This is a building at Mr. Cooper's home, following the lines of the Mediterranean style of architecture, which has been, within and without, a laboratory for the testing of promising suggestions. The exterior has tried out various kinds of sculpture, plaster finish, tinting and the like, while within, in addition to a draughting room for special work and use when the city office is overcrowded, the studio has a small auditorium. Here have been developed interior decoration in materials and products, acoustic properties have been tested and devices for illumination, and here were developed the earlier ideas in the processes of sound amplification, which has now given to school houses a new and almost unlimited adjunct to standard educational methods.

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Mr. Cooper graduated from Chauncy Hall School in Boston, studied engineering under Harry Keith and architecture under Henry Van Brunt. His practical experience began with Shepley, Rutan and Coolidge, by whom he was employed first as draughtsman and later as superintendent, having charge of the erection in Pittsburgh, Penna., of the Alleghany County Court House, Masonic Temple and Shadyside Presbyterian Church.

He is past-President of the Massachusetts Chapter American Society of Heating and Ventilating Engineers, Life Member of the National Education Association, was for seven years chairman of its Committee on School House Planning and Construction, and he is a Royal Arch Mason.

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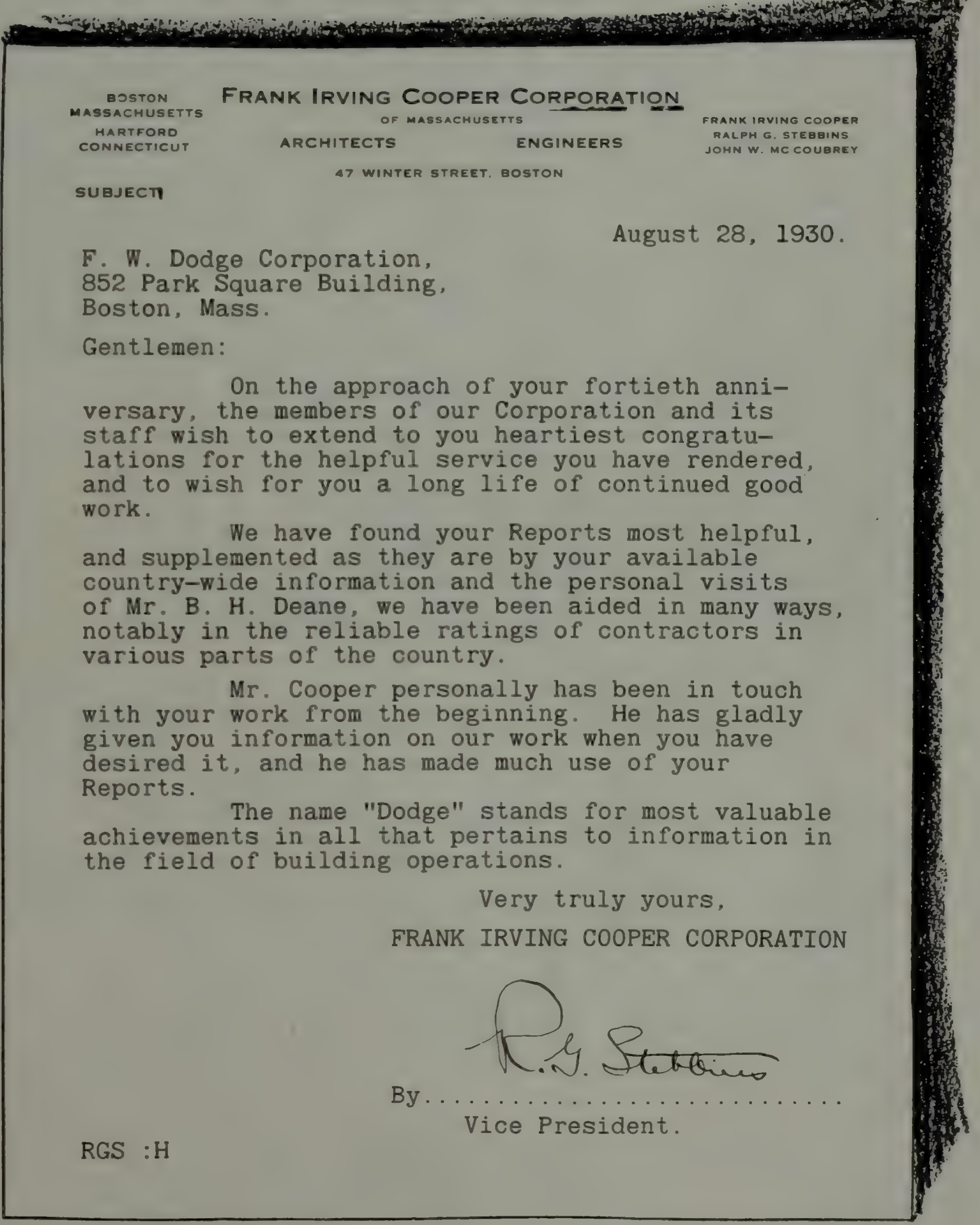

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SUBJECT

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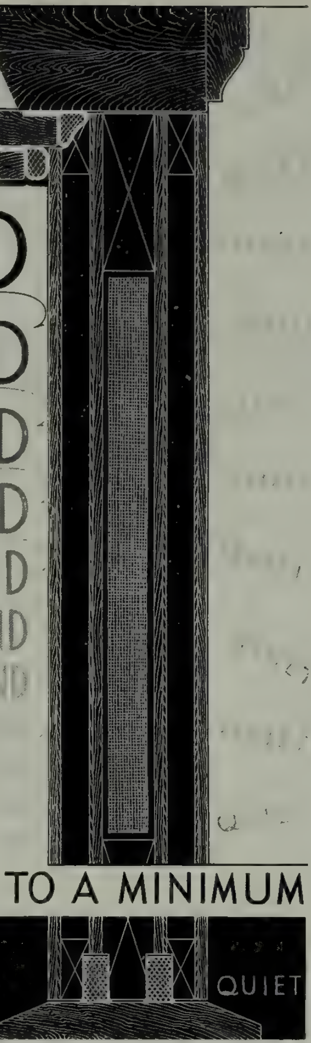

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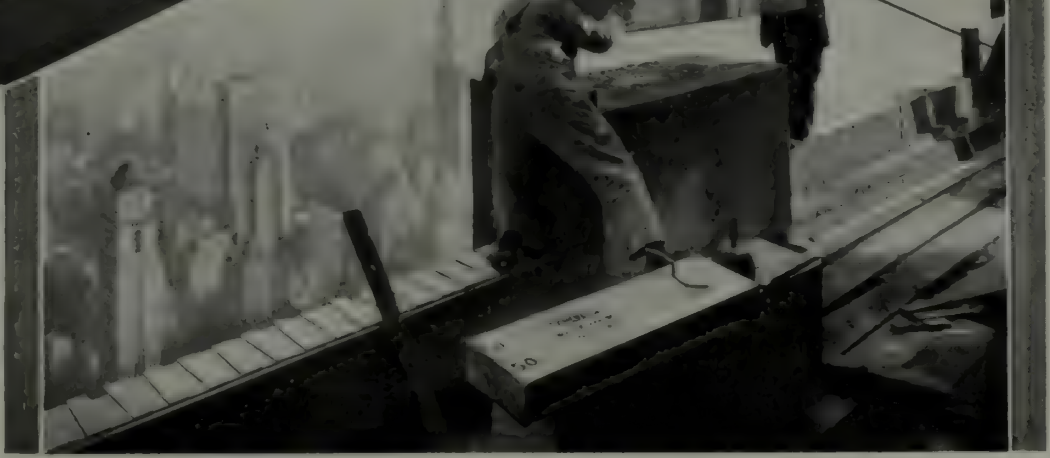
Left: Cheney Flashing being installed on parapet above the 86th Floor—Empire State Building. Note key-ways in flashing ready for mortar to form "The Unbreakable Key Bond." Note also tower of the Chrysler Building below.



Right: Setting coping stone onto the mortar bed which has been laid over the flashing.

Note the absence of dowels. Cheney Flashing—"Does Not Break the Bond"—the only type of flashing that permits the elimination of dowels.

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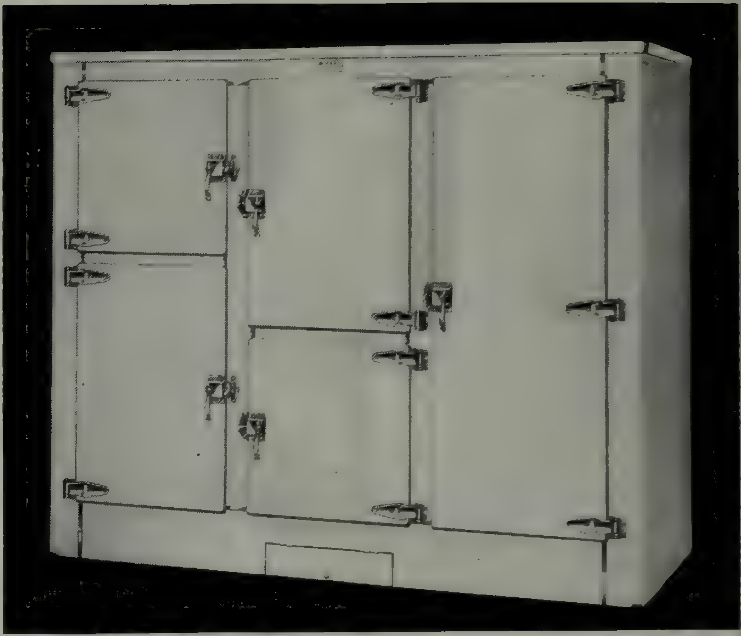

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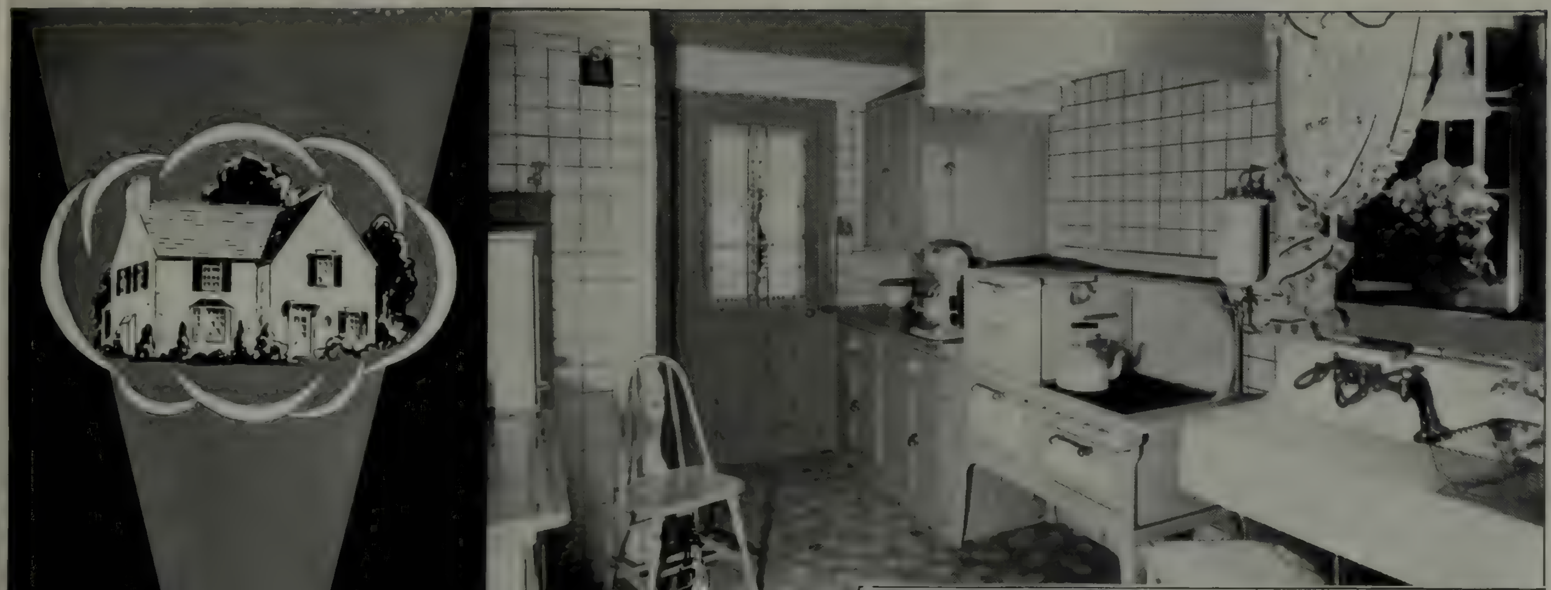

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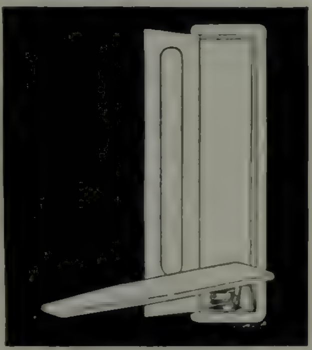

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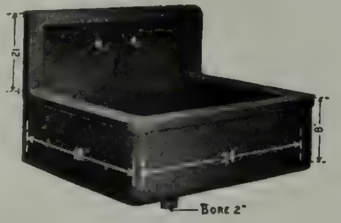

Figure 237
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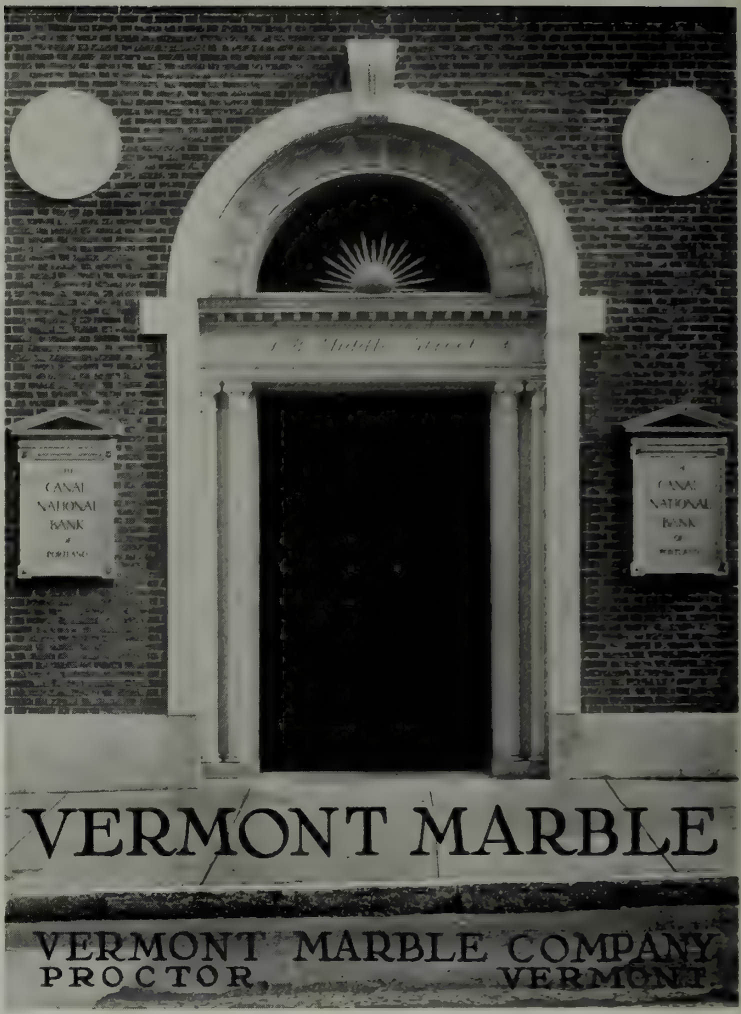

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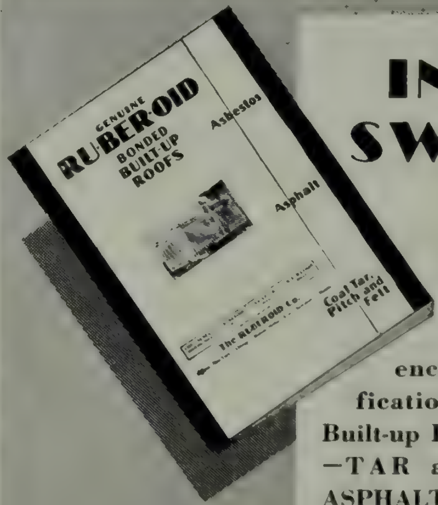

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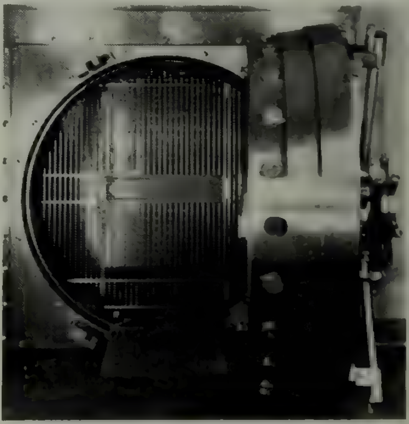

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THE modernistic style of the new TRENTONIAN expresses the touch of individuality so desirable in modern day kitchens. Its very simplicity of design and excellence of construction place the TRENTONIAN entirely "in character" with today's trend toward finer fixtures.

This latest contribution by Trenton is an all-porcelain, double compartment sink with integral back and center partition, on porcelain pedestal supports, with iron straps to wall—60" long, 26" wide and 7" height of back.

Any architect can unhesitatingly specify the new TRENTONIAN with full assurance of the utmost satisfaction on the part of his client.

THE TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY, U. S. A.

National Exhibit Rooms
101 Park Ave., New York City
Entrance on 41st Street

Sales Offices in
Philadelphia, Boston
and San Francisco

Export Office: 115 Broad St., New York City

Our Guarantee

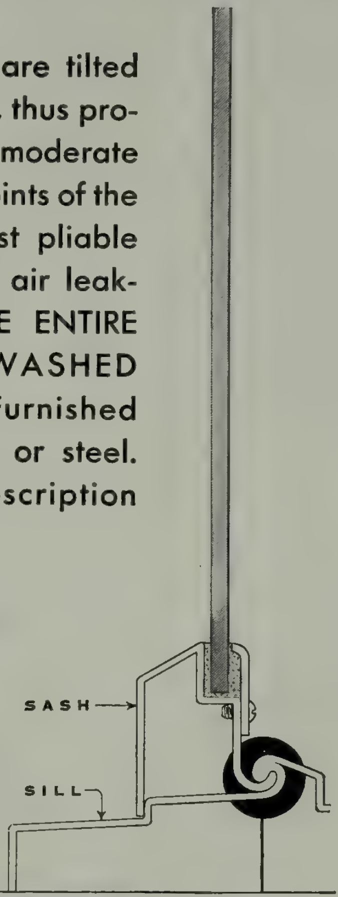
We make but one grade of ware—the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.

TE-PE-CO
PLUMBING FIXTURES

SEALAIR
IS DRAFT PROOF
Open or Closed

When open the sashes are tilted to deflect the air current, thus providing the interior with moderate ventilation. Closed, the points of the sash are pressed against pliable asbestos strips reducing air leakage to a minimum. THE ENTIRE WINDOW MAY BE WASHED FROM THE INSIDE. Furnished in heavy gauge bronze or steel. Send for complete description and F. S. details.

THE
Kawneer
COMPANY
Manufacturers of
BRONZE STORE FRONTS,
WINDOWS AND DOORS
Niles, Michigan
Subsidiary: Berkeley, Calif.



ALSO WEIGHT-HUNG WINDOWS (Light and Heavy) AND CASEMENTS

CLASSIFIED DIRECTORY OF ADVERTISERS

Alphabetical Index to Advertisers, Page 154

After reviewing advertisements in this issue—consult Sweet's Architectural Catalogues for 1931 for up-to-date catalogues and specifications on the products of most of the manufacturers.

Acid Proof Chemical Stoneware
Knight, Maurice A.

Acoustics
Armstrong Cork & Insulation Co.
Boston Acoustical Eng. Division of Housing Company
Guastavino, R., Co.
Johns-Manville Corp.
U. S. Gypsum Co.

Air Conditioner
American Blower Co.
Carrier Engineering Corp.

Aluminum
Aluminium Co. of America
British Aluminium

Architectural Supplies
American Pencil Co.
Higgins, Chas. M., & Co.

Asbestos—Johns-Manville Corporation

Basement, Windows—Steel
Detroit Steel Products Co.
Kalman Steel Co.
Truscon Steel Company

Beads—Corner Metal
Kalman Steel Co.
Milcor Steel Co.
Truscon Steel Company

Beams, Angles, Channels, Etc.
Bethlehem Steel Co.
Carnegie Steel Company
Illinois Steel Co.
Jones & Laughlin Steel Corp.

Blackboards—Weber Costello Co.

Boilers—American Gas Products Co.
American Radiator Co.
Dahlquist Mfg. Co.
Heggie-Simplex Boiler Co.
Pierce, Butler & Pierce Mfg. Co.
Smith, H. B., Company, The, Inc.
Wood, Gar, Engineering Co.

Bolts—Door—Corbin, P. & F.

Brass and Bronze
See "Ornamental Metal"

Bridges—Steel—American Bridge Co.
Bethlehem Steel Co.

Building Paper
Angier Corporation

Buildings—Steel
Carnegie Steel Company
Illinois Steel Co.

Butts—Corbin, P. & F.
Stanley Works

Cabinet Work
Grand Rapids Store Equipment Corp.

Cabinets—Kitchen
Olean Metal Cabinet Works, Inc.

Cabinets—Toilet Paper
Victoria Paper Mills Co.

Casement Operators—Rixson, Oscar C., Company

Casements—Bayley, William, Co.
Crittall Casement Window Co.
Detroit Steel Products Co.
International Casement Co.
Meeker Bros. Iron Company
Michaels Art Bronze Co.
Truscon Steel Company

Cast Stone
Cast Stone Institute

Cellar Drainer
Penberthy Injector Co.

Cement—Louisville Cement Company
Medusa Portland Cement Co.
Portland Cement Association
Universal Atlas Cement Co.

Cement White
Medusa Portland Cement Co.

Chain Sash
Detroit Steel Products Co.
Smith & Egge Mfg. Co.

Chairs—Marble, B. L., Chair Co.

Channels—Carnegie Steel Co.
Concrete Engineering Co.
Illinois Steel Co.
Jones & Laughlin Steel Corp.
Kalman Steel Co.

Church Memorials
Michaels Art Bronze Co.

Cleaning Systems
Spencer Turbine Co.

Clocks, Electric
Landis Eng. & Mfg. Co.

Columns, Porches, Etc.
Hartmann-Sanders Co.
Union Metal Mfg. Co.

Concrete Accelerator
Master Builders Co.
Solvay Sales Corp.

Concrete Construction—Reinforced
American Steel & Wire Company
Kalman Steel Co.
Truscon Steel Company

Concrete Hardener
Master Builders Co.
Sonneborn, L., Sons, Incorporated
Solvay Sales Corp.

Concrete Surface Treatment
Master Builders Co.
Solvay Sales Corp.

Conduits
Fibre Conduit Co.
Fretz-Moon Tube Co.
Garland Mfg. Co.

Cork Tile Flooring
Armstrong Cork Company, Floor Division
Congoleum-Nairn, Inc.

Corkboard
Armstrong Cork & Insulation Co.

Covering—Pipe and Boiler
Armstrong Cork & Insulation Co.
Johns-Manville Corporation

Door Checks
Independent Lock Co.

Door Closers—Corbin, P. & F.
Sargent & Company

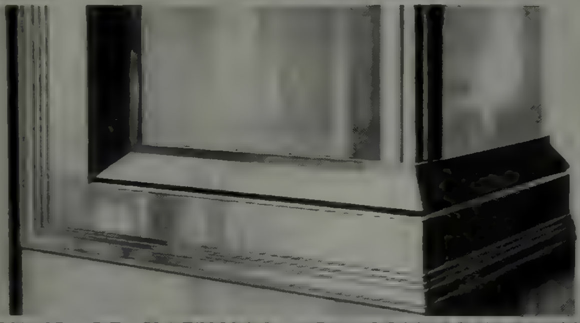
Door and Window Frames
Andersen Frame Corp.

STORE FRONTS

QUIGLEY BUILDING, CHICAGO
Architect, Jos. T. Fortin. Associate, David Adler

CUSTOM-BUILT

by a corps of skilled craftsmen. Every rolled, extruded or cast unit is carefully executed and assembled by this trained staff, assuring the architect a faithful rendering, in metal, of his design. Upon request we will send new free Book of Modern Store Front installations, also description and F. S. Details of "B" Construction.



DETAIL OF KAWNEER "B" CONSTRUCTION

THE
Kawneer
COMPANY

NILES, MICHIGAN, Subsidiary, BERKELEY, CALIFORNIA
RUSTLESS METAL STORE FRONTS, WINDOWS and DOORS
ALSO ORNAMENTAL BRONZE AND IRON

SUBSTITUTES
CANNOT
*give the same
results*

STAINLESS

Since the granting of the *original* "Stainless" Patents, numerous alloys have been exploited which are often loosely and improperly referred to as "Stainless Steel." Some makers of these metals are prone to capitalize the success of *Genuine* "Stainless" and to mislead the fabricator into thinking that a straight chrome iron is not obtainable in the particular physical properties required in his product. Nothing is further from the truth. Stainless Steel is available in Brinell 150 to 600 and tensile strength 60,000 to 250,000 pounds per square inch. It is lower priced than the majority of its competitors and provides greater toughness and richer beauty than is obtainable in any other modern metal . . . It *pays* to know about "Stainless" . . . Our booklets "Stainless in Industry" and "Stainless in the Home" will give you the facts . . . Write for them.

genuine
STAINLESS
★ **STEEL** ★
*is manufactured only
under the patents of*
AMERICAN STAINLESS
STEEL COMPANY
Commonwealth Bldg. • Pittsburgh, Pa.

Doors—Bayley, William, Company
Compound & Pyrono Door Co.
Dahlstrom Metallic Door Co.
Detroit Steel Products Co.
International Casement Co.
Kalman Steel Co.
Kawneer Company
Kinnear Mfg. Co.
Michaels Art Bronze Co.
Peelle Company, The
Roddis Lumber & Veneer Co.
Sanymetal Products Co.
Security Fire Door Co.
Thorp Fire Proof Door Company
Wilson, J. G., Corp.

Drains—Josam Mfg. Co.

Drawing Inks—Higgins, Chas. M., & Co

Dumb Waiters
Sedgwick Machine Works

Electric Switches
Hart & Hegeman Mfg. Co.

Electrical Equipment
Adam, Frank, Electric Co.
American District Tel. Co.
Bryant Electric Company
Fibre Conduit Co.
General Electric Company
Graybar Electric Co.
Hart & Hegeman Mfg. Co.
Holtzer-Cabot Electric Co.
Imperial Electric Co.
National Electric Light Association
Westinghouse Electric & Mfg. Co.

Elevator Doors
Michaels Art Bronze Co.
Peelle Company, The
Security Fire Door Co.

Elevators
Otis Elevator Company
Sedgwick Machine Works
Westinghouse Electric Elevator Co.

Enamels
Du Pont de Nemours, E. I., & Co., Inc.
Pratt & Lambert, Inc.
U.S. Gutta Percha Paint Co.

Engineers—Inspection
Robert M. Hunt Co.

Expanded Casings—Milcor Steel Co.

Expanded Metal
Truscon Steel Company

Fence Post—Steel
American Steel & Wire Co.

Fence—Woven Wood
DuBois Fence & Garden Co., Inc.
Reeves, Robert C., Co.

Fences—American Steel & Wire Co.
Fiske, J. W., Iron Works

Fire Exit Devices
Vonnegut Hardware Company

Fire Extinguishers—Pyrene Mfg. Co.

Fireplace Construction—Covert, H. W., Co.

Fireproof Doors, Shutters and Windows
Compound & Pyrono Door Co.
Dahlstrom Metallic Door Co.
Detroit Steel Products Co.
Kawneer Company
Mesker Bros. Iron Company
Peelle Company, The
Thorp Fire Proof Door Company
Truscon Steel Company

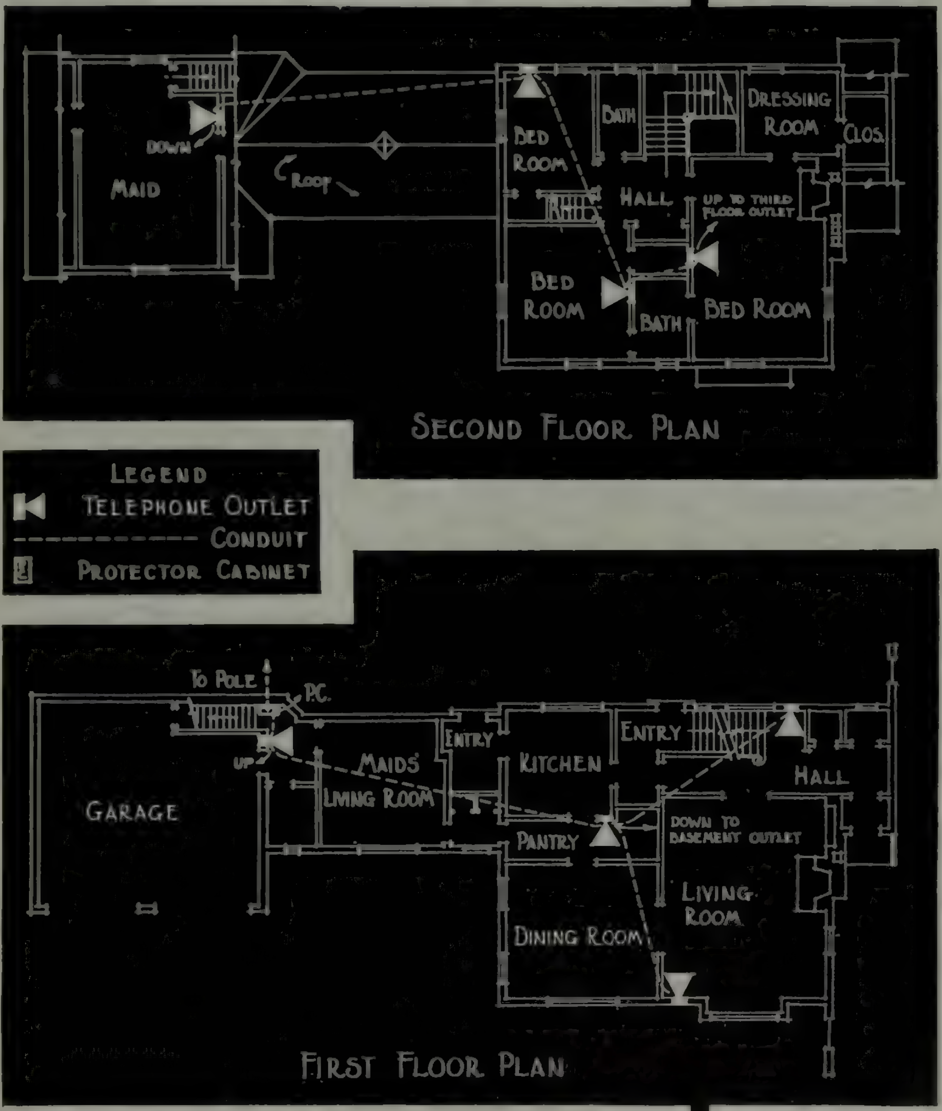
Complete telephone convenience is provided for in the residence of Mr. Russell F. Smith, 501 N. Ironwood Drive, South Bend, Indiana, by ten telephone outlets, including one in the basement and one on the third floor. Two central office lines permit greater freedom in using the service. Built-in conduit carries all necessary wiring. Fett, Pearson & Goffeney, Architects, *South Bend, Indiana.*

TODAY, TELEPHONE CONVENIENCE IS PLANNED IN ADVANCE

Modern homes, built for comfort and convenience, have telephones throughout . . . in living room, library, kitchen, garage, bedrooms, nursery . . . wherever time and steps can be saved by quick communication.

Many architects, in planning new or remodeled residences, now specify conduit for telephone wiring within the walls and floors. In this way, it is possible to provide telephone outlets at the most convenient locations in each of the important rooms. All wiring is completely concealed, thereby giving greater freedom from certain types of service interruption. Moreover, the home owner may use any number of outlets at a time, and can readily expand or rearrange his service to meet changing requirements.

Your local telephone company will be glad to assist you in planning the telephone arrangements for any of your projects. There is no charge for the service. Just call the Business Office.



Angier

BROWNSKIN
Resilient
Building Paper

Angier

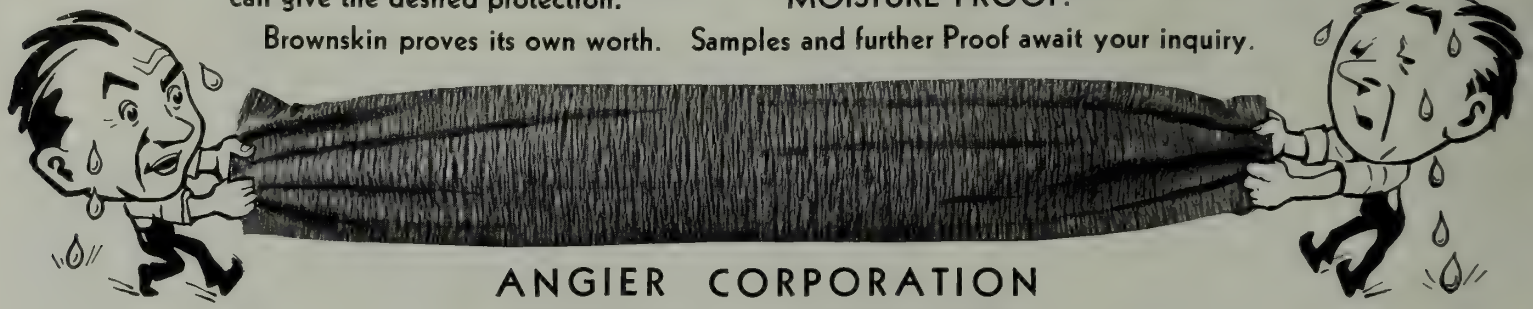
Keeps Faith with your Expectations and your Specifications

Building papers were expected to give positive protection wherever installed, and previous to the introduction of Brownskin it was presumed that they accomplished their purpose.

Investigation, however, proves that non-stretchable papers split, tear and drag from their nails under even ordinary building strains and that only a resilient building paper can give the desired protection.

Resilience in Building Paper,—found exclusively in Brownskin, permits this paper to stretch, contract and generally conform to building strains—shrinkage and settling without breaking.

Brownskin is not only Resilient in any temperature or weather, but is absolutely Waterproof, Strong and MOISTURE PROOF.



Brownskin proves its own worth. Samples and further Proof await your inquiry.

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- **Fireproofing**
  - See "Concrete Construction," "Covering, Pipe and Boiler," "Fireproof Doors, Shutters and Windows," "Lath—Metal."
- **Flashing Wall**
  - Cheney Company
- **Floor Clips**
  - Kalman Steel Co.
- **Floor Covering**
  - Congoleum-Nairn, Inc.
  - Stedman Rubber Flooring Company
- **Floor Hardeners**
  - Master Builders Co.
  - Sonneborn, L., Sons, Incorporated
  - Truscon Laboratories
- **Floor Plate Steel**
  - Carnegie Steel Co.
- **Flooring**
  - Armstrong Cork Co. (Flooring Division)
  - Cellized Oak Flooring Co.
  - Congoleum-Nairn, Inc.
  - Goodyear Tire & Rubber Co., Inc.
  - Master Builders Co.
  - Norton Company
  - Stedman Rubber Flooring Company
  - Structural Gypsum Corp.
- **Flooring—Composition**
  - Congoleum-Nairn, Inc.
- **Flooring—Grid**
  - Snead & Company
- **Floors—Fireproof**—Structural Gypsum Corp.
- **Fountains—Drinking**
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  - Taylor, Halsey W.
- **Furniture**—Marble, B. L., Chair Co.
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- **Garden Furniture and Ornaments**
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  - American Radiator Co.
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- **Gas Ranges**—American Stove Company
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  - American Window Glass Co.
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  - Pittsburgh Plate Glass Co.
- **Glassware—Lighting**
  - Macbeth-Evans Glass Co.
- **Granite**
  - Fletcher, H. E. Co.
  - National Bldg. Granite Quarries Assn.
- **Greenhouses**
  - Highton & Sons, Wm., Division Hart & Cooley Mfg. Co.
  - King Construction Co.
- **Grids—Flooring**
  - Snead & Company
- **Grilles**—General Bronze Corp.
  - Michaels Art Bronze Co.
- **Gypsum Slabs**
  - U. S. Gypsum Co.
- **Hardware**—Corbin, P. & F.
  - Independent Lock Co.
  - Rixson, Oscar C., Company
  - Russell & Erwin Mfg. Co.
  - Sargent & Company
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- **Heat Insulation**—Johns-Manville Corporation
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SECURITY DOORS · OF COURSE ·

Power-operated, M-6 "Seco" Doors 16' Wide in the Hupp Motor Corporation Engineering and Storage Building, Detroit, Michigan.

MADE GOOD . . . . . .
. . . . . . MAKING GOOD

Today, more than ever, the comparative value of every product is quite as essential as the reputation of the manufacturer who builds it . . . . At the right is listed a partial group of Security Door installations made in 1930—some on the basis of past Security performance, others on the basis of that careful comparison which determines the choice of Security Doors as a matter of course.

PARTIAL LIST OF RECENT SECURITY DOOR INSTALLATIONS

The Merchandise Mart	Chicago, Ill.
Crooks Terminal Warehouse	Kansas City, Mo.
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The Dayton Union Railway Co.	Dayton, Ohio
Eastern Outfitting Co.	Los Angeles, Cal.
Scobey Fireproof Storage Co.	San Antonio, Texas
Produce Terminal, for Buffalo Market Terminal Company	Buffalo, N. Y.
Detroit Union Produce Terminal	Detroit, Mich.
River Terminal Warehouse	Memphis, Tenn.
Central Warehouse	Huron, S. C.
Dreyfuss Warehouse	Tulsa, Okla.
Henry O'Neil Warehouse	Rapid City, S. D.
Sheboygan Furniture Forwarding Co.	Sheboygan, Wis.
Oregon Short Line Railroad Whse	Salt Lake City, Utah
Union Transfer & Storage Co.	Fargo, S. D.
Leonard Warehouse	Buffalo, N. Y.
Wilson Transportation Warehouse	Sioux Falls, S. D.
Rag Warehouse, for Nickel Plate Development Co.	Cleveland, Ohio
Julius Garfinckel Department Store	Washington, D. C.
Polsky Department Store	Akron, Ohio
Bon Marche Department Store	Seattle, Wash.

Send for Catalog—or Inquire at Any of Our Offices

SECURITY FIRE DOOR CO. 3044 Lambdin Ave., ST. LOUIS

OFFICES IN NEW YORK . . . BOSTON . . . PHILADELPHIA . . . CHICAGO
SAN FRANCISCO . . . LOS ANGELES . . . DETROIT AND OTHER PRINCIPAL CITIES

824

SECURITY DOORS

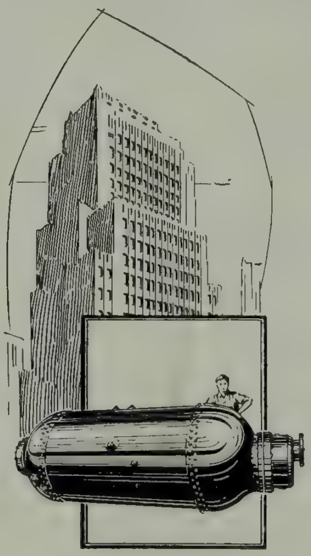
Make good freight elevators more efficient

NOW . . is the TIME for COPPER BOILERS!

THE price of copper is lower today than it has been for years. This condition gives an unequalled advantage to the purchaser of copper boilers. The superiority of copper over every other metal for hot water boilers is obvious to every one and the differential in price between boilers constructed of copper and those made of steel or galvanized iron is less today than it has been in years. This is a buyer's opportunity and the shrewd purchaser of hot water heating equipment is taking advantage of this condition which is enabling him to secure the finest equipment at remarkably low prices.

Now is the time to install Dahlquist Copper Boilers for new work or to replace old steel or galvanized iron units with the vastly superior copper product.

The Dahlquist Manufacturing Company produces a complete line of copper hot water heating boilers made to the very highest standards of material and construction from the largest unit for industrial purposes to the smallest range boiler for the cottage. There is a Dahlquist Copper Boiler to suit your requirements.



SUPER-AQUATHERM
Gas Under Fire

AUTOMATIC GAS UNIT
With Side Arm

Ask us for full information regarding the Dahlquist complete line of copper boilers for industry and home.

Dahlquist fundamental improvements for household units are recognized throughout the world. The Dahlquist Aquatherm and the Dahlquist Turbo-Aquatherm have greatly increased the efficiency of hot water service for the home. Write for full particulars.

Dahlquist Mfg. Co.

A, 2nd & West 3rd Streets So. Boston, Mass.

Heating Apparatus
- Aerofin Corporation
- American Blower Co.
- American Gas Products Corp.
- American Radiator Company
- Dunham, C. A., Company
- Heggie-Simplex Boiler Co.
- Johnson, S. T., Co.
- Marsh, J. P. & Co.
- Nash Engineering Company
- Nelson, Herman, Corp.
- Peerless Unit Ventilation Co., Inc.
- Pierce, Butler & Pierce Mfg. Co.
- Smith, H. B., Company
- Sturtevant, B. F., Co.
- Wood, Gar, Engineering Co.

Hinges—Gravity
- Sanymetal Products Co.

Hinges—Invisible
- Soss Manufacturing Company

Incinerators
- Kerner Incinerator Co.

Inspection Engineers
- Robert W. Hunt & Co.

Insulation—Armstrong Cork & Insulation Co.
- Cabot Samuel, Inc.
- Cornell Wood Products Co.
- Flax-li-num Insulating Co.
- U. S. Mineral Wool Co.

Interior Communication System
- Automatic Electric Co.
- Connecticut Tel. & Elec. Corp.
- Holtzer-Cabot Electric Co.

Kitchen Units
- International Nickel Co.
- Olean Metal Cabinet Works, Inc.

Lath—Metal—American Steel & Wire Co.
- Kalman Steel Co.
- Milcor Steel Co.
- National Steel Fabric Co.
- Truscon Steel Company

Lighting Control—Theatre
- Adams, Frank, Electric Co.

Lighting Equipment
- Graybar Electric Co.
- Macbeth Evans Glass Co.
- Michaels Art Bronze Co.
- National Electric Light Assoc.
- Pearlman, Victor S., & Co.
- Smyser-Royer Company
- Westinghouse Electric & Mfg. Co.

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Limestone—Indiana Limestone Company
- Victor Oolitic Stone Co.

Linoleum
- Armstrong Cork Company, Floor Division
- Congoleum-Nairn, Inc.

Locks—Corbin, P. & F.
- Independent Lock Co.
- Russell & Erwin Mfg. Co.
- Sargent & Company

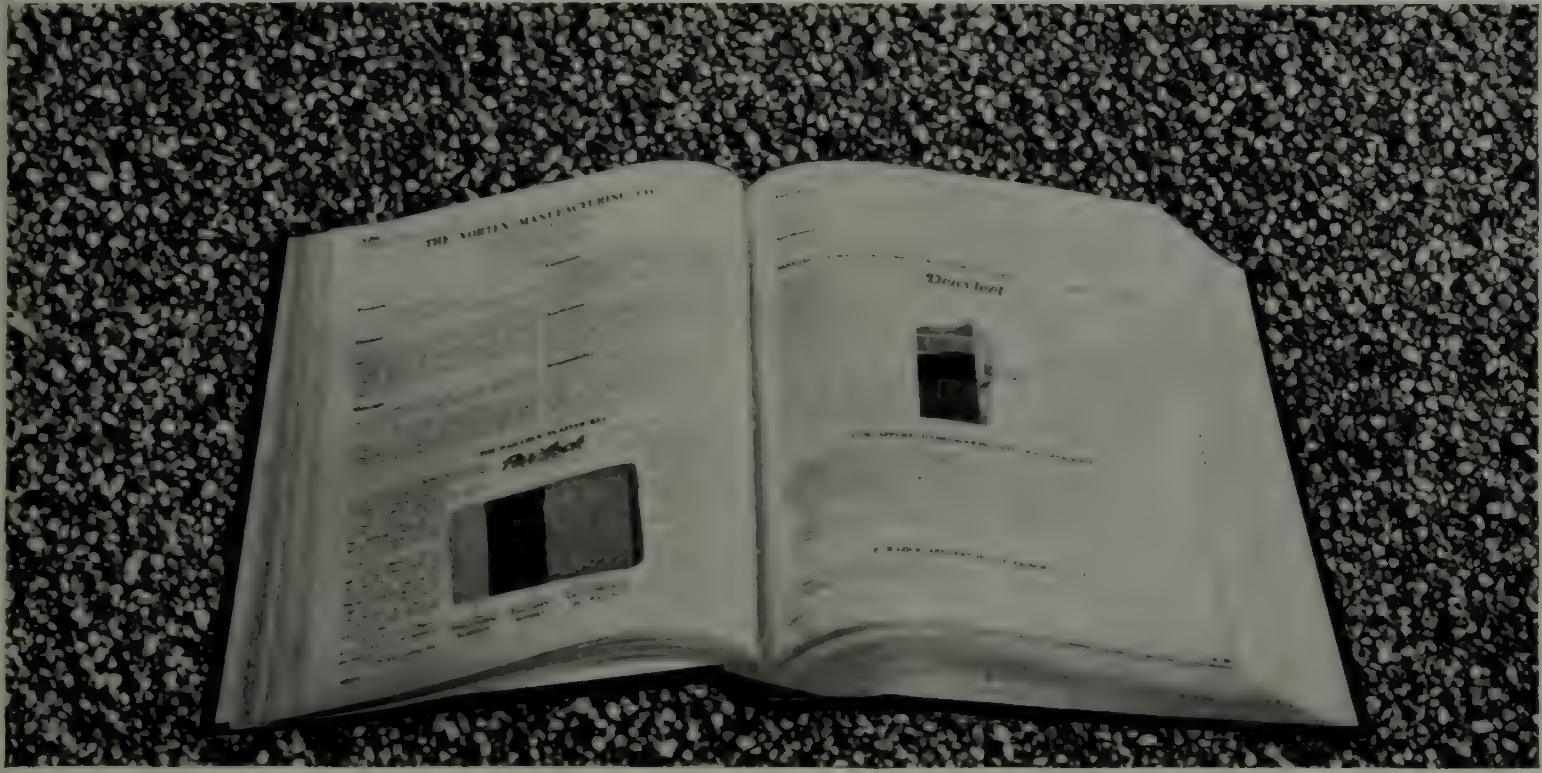
Lumber—See Woods

Mail Chutes—Cutler Mail Chute Co.

Mantels—Artificial Stone
- Jacobson Mantel & Ornament Co

Marble—Georgia Marble Company
- Vermont Marble Co.

PAR-LOCK IS AN OPEN BOOK



The Whole Story, Simplified in Sweet's Pages A286-287

To comprehend Par-Lock and Dens-tect it is only necessary to turn to the concise, accurate explanation in Sweet's Catalogue, Pages A 286-287. ¶ To apply this knowledge to your own problem, with accurate estimate of costs, get in touch with the nearest Par-Lock Applier. ¶ You will not be bombarded with Par-Lock literature in 1931. We propose to save your time and our money by confining the Par-Lock and Dens-tect stories to this convenient work of reference. ¶ Par-Lock Products, always coupled with efficient Par-Lock applying service, afford you a complete range of pre-plastering treatments for masonry surfaces plastered direct . . . as well as a variety of dependable damp-proofing and water-proofing treatments.

Par-Lock
Plaster Key

For quick attention in applying centers, you will find Par-Lock Appliers, listed as such in local phone directories.

Dens-tect
Protects Plaster

Address ***PAR-LOCK APPLIERS*** *of {Name of City at any Point Listed}*

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CLEVELAND · COLUMBUS · DETROIT · MINNEAPOLIS · NEWARK · NEW YORK · PHILADELPHIA
PITTSBURGH · SCRANTON · ST. LOUIS · TORONTO · TRENTON · YOUNGSTOWN · WILKES-BARRE

THE VORTEX MANUFACTURING COMPANY · *1987 West 77th St., Cleveland, Ohio*

Detail, Bendix Bldg., Los Angeles, Calif.
Carl Jules Weyl, Architect

TERRA COTTA

Because it is easily modelled, an extensive use of terra cotta is always extremely practical even for industrial buildings.

The photograph shows one of a series of panels symbolizing Invention, Education, Progress, etc. At small cost, the Bendix Building is thus set apart from its neighbors and given individuality.

NATIONAL
TERRA COTTA
SOCIETY
230 PARK AVENUE
NEW YORK

NATIONAL TERRA COTTA SOCIETY
Please send me your plates
TERRA COTTA — STANDARD CONSTRUCTION
Name
Address
City State

Memorials—Church
Michaels Art Bronze Co.

Metal Corner Bead—Kalman Steel Co.
Milcor Steel Co.
Truscon Steel Company

Mineral Wool—U. S. Mineral Wool Co.

Monel Metal
International Nickel Co., Inc.

Mortar—Louisville Cement Co.
National Steel Fabric Co.

Nirosta Metal—Krupp Nirosta Co., Inc.

Oil Burners
Johnson, S. T., Co.
Wood, Gar, Engineering Co.

Ornamental Metal
Aluminum Co. of America
American Brass Co.
Fiske, J. W., Iron Works
General Bronze Corp.
Michaels Art Bronze Co.
Smyser-Royer Company

Paints—Aluminum Co. of America
Berry Brothers
Cabot, Samuel, Inc.
Du Pont de Nemours, E. I., & Co., Inc.
National Lead Co.
Pittsburgh Plate Glass Co.
Pratt & Lambert, Inc.
U. S. Gutta Percha Paint Co.

Panelboards
Adam, Frank, Electric Co.
General Electric Co.
Trumbull Electric Mfg. Co.
Westinghouse Electric & Mfg. Co.

Paper—Toilet
Victoria Paper Mills Co.

Partitions
National Steel Fabric Co.
Sanymetal Products Co.
Wilson, J. G., Corp.

Partitions—Toilet
Sanymetal Products Co.

Pencils—American Pencil Co.

Piling—Concrete
MacArthur Concrete Pile Corp.
Raymond Concrete Pile Co.

Piling—Steel Sheet
Bethlehem Steel Co.
Carnegie Steel Co.

Pipe—Bethlehem Steel Co.
Jones & Laughlin Steel Corp.
National Tube Company
Reading Iron Company
Republic Steel Corp.
Spang Chalfant & Co., Inc.
Youngstown Sheet & Tube Co.

Plate Glass—Pittsburgh Plate Glass Co.

Plaster Bond—Cabot, Samuel, Inc.

Plaster Gypsum—U. S. Gypsum Co.

Plaster Key—Vortex Mfg. Co.

Plaster—Ornamental
Jacobson & Company

Plumbing Fixtures
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Crane Co.
Hoffmann & Billings Mfg. Co.
Kohler Co.
Penberthy Injector Co.
Rundle-Spence Mfg. Co.
Sanymetal Products Company
Taylor, Halsey W.
Trenton Potteries Company

Protective Service—American District Tel. Co.
Western Electric Co.

Pumps—Dunham, C. A., Co.
Nash Engineering Company

ARE YOU BUYING *Mileage*?

ALERT in all other phases of business management, many executives fail to give full consideration to their problems of interior communication. The result is, that employees are only partially efficient. Their working day can be measured more nearly in miles of travel between departments than in actual accomplishment.

Organizations which have installed Strowger P-A-X avoid this wasteful mileage, besides reaping many additional benefits in efficiency and utility from the use of this leading type of automatic interior telephone equipment.

More than 2000 business organizations, both large and small, now depend daily upon the "step-saving" advantages of P-A-X. In every instance in which P-A-X is used, time is not only employed more profitably, but a more thoroughly coordinated organization has resulted. The fact that P-A-X achieves a tremendous increase in the number of daily phone calls immediately from the hour it enters into use, shows that its great usefulness is not restricted to the more important calls, but includes the less important ones as well.

Strowger P-A-X puts an end to employees scurrying about the office and plant as message carriers. Being automatic, P-A-X gives always lightning-like action; it never fails; it accelerates organization procedure, and is trouble-free in operation.

If you desire complete information on Strowger P-A-X, write for illustrated literature.

STROWGER AUTOMATIC
DIAL SYSTEMS
INCLUDE:
Public Automatic Telephone and Signalling Systems
Private Automatic Telephone Systems—(Strowger P-A-X
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Tele-Chec Systems (for Theatres) Watchmen's Supervisory Systems
Railway Communication Equipment
Marine Telephone & Signalling Systems
Miscellaneous Telephone and Signal Accessories

Strowger P-A-X is available in capacities to suit the requirements of large and small organizations—from a half dozen telephones or less, up to several hundred. Studies gladly made without obligation to determine the type best fitted to your conditions.

Engineered, Designed and Manufactured by
Automatic Electric Inc.
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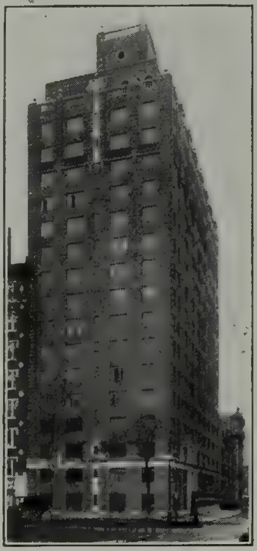

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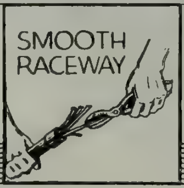

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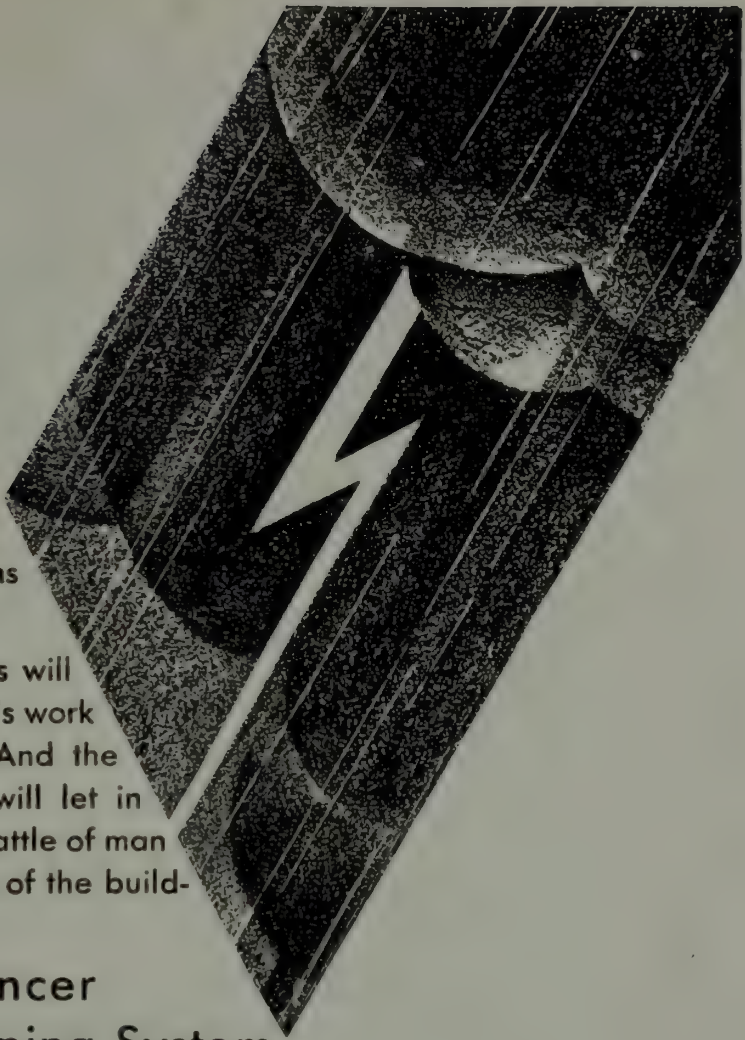

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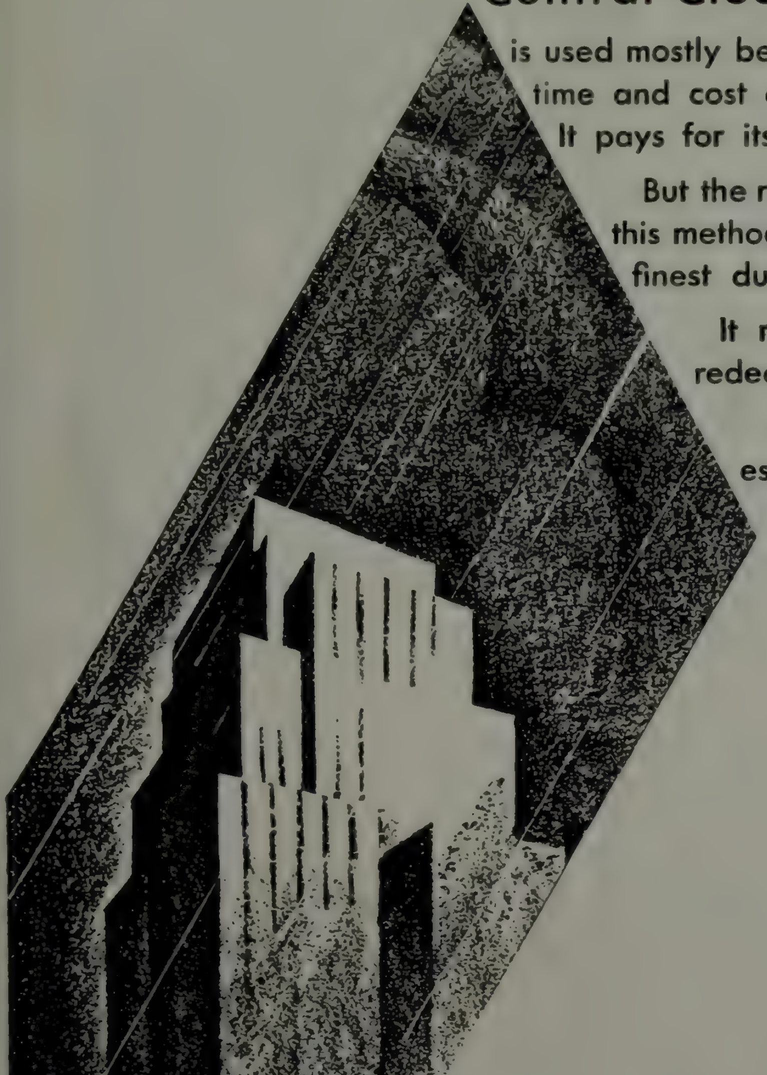

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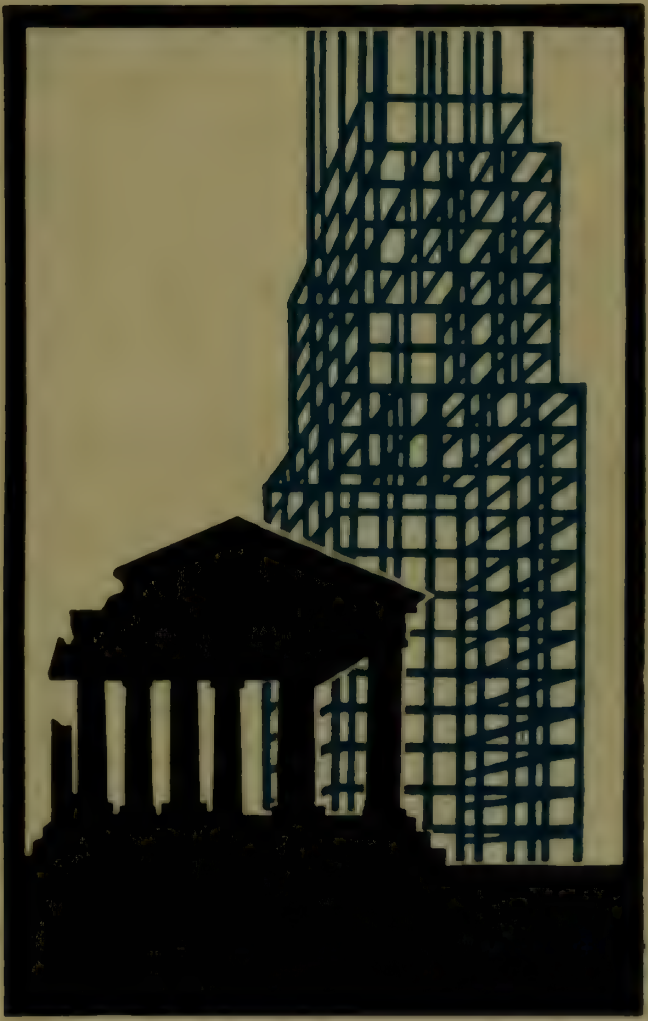

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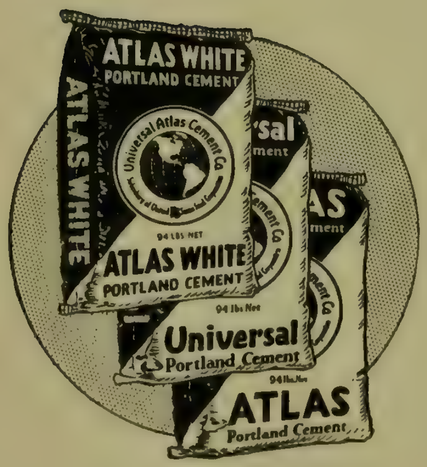

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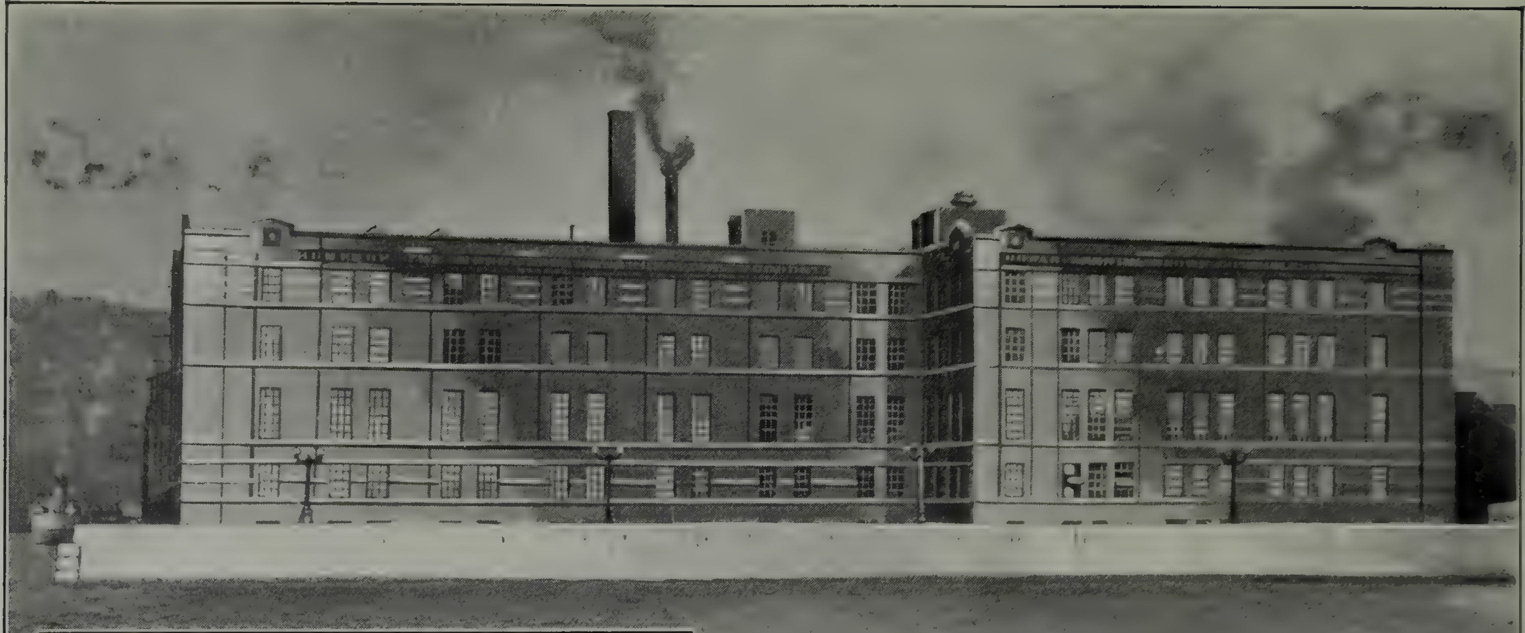

The Gowan-Lenning-Brown Wholesale Warehouse, Duluth, Minnesota. F. G. German, Architect. Lief Jensson, Asst. Architect. W. J. Zitterell, Contractor.

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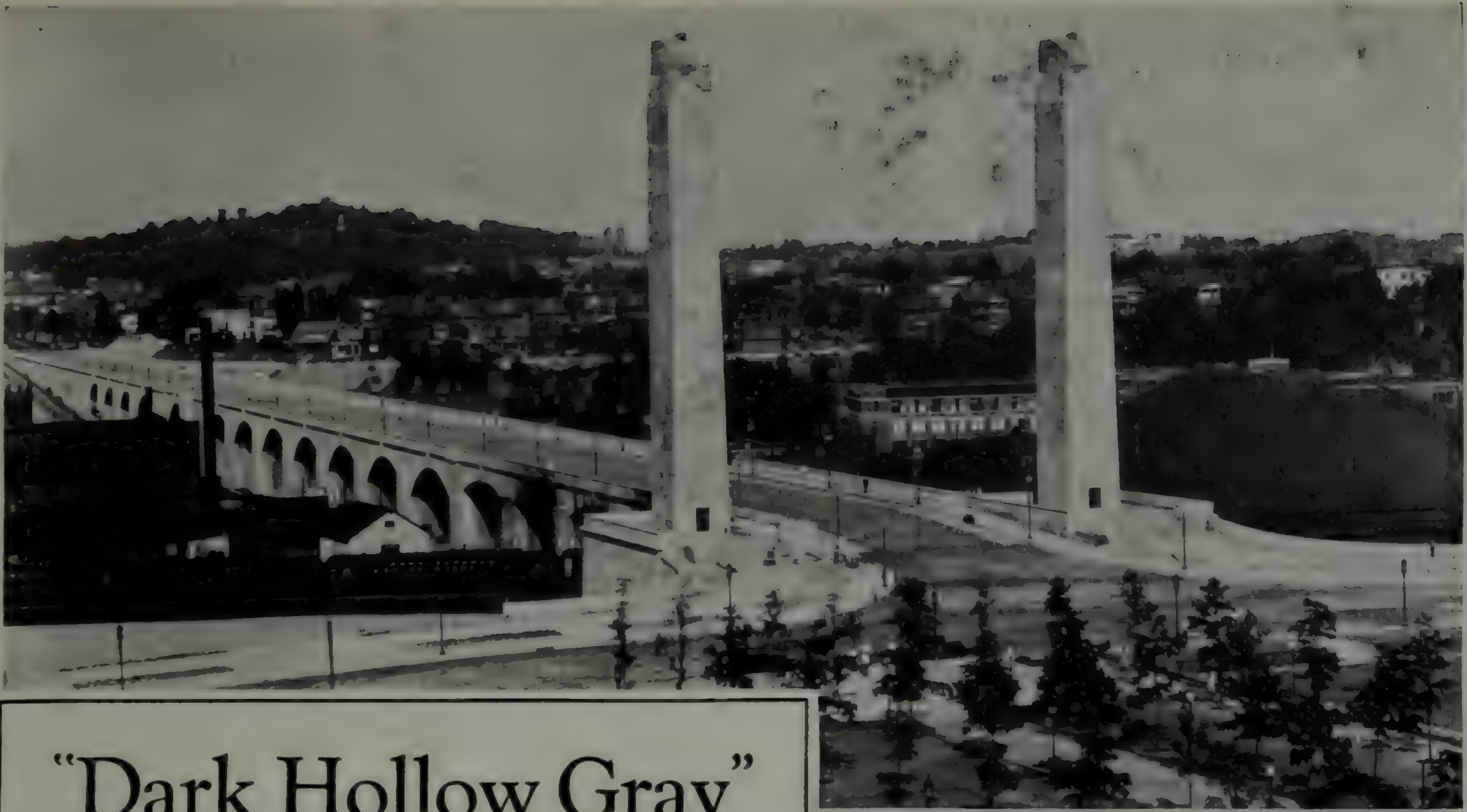

Soldiers' and Sailors' Memorial Bridge, Harrisburg, Pa. Sidney Fuller Ross and William Gehron, Architects. J. E. Greiner Co., Consulting Engineers. Gray Indiana Limestone. (Photo Pennsylvania Department of Highways.)

"Dark Hollow Gray" Chosen for the Harrisburg Bridge

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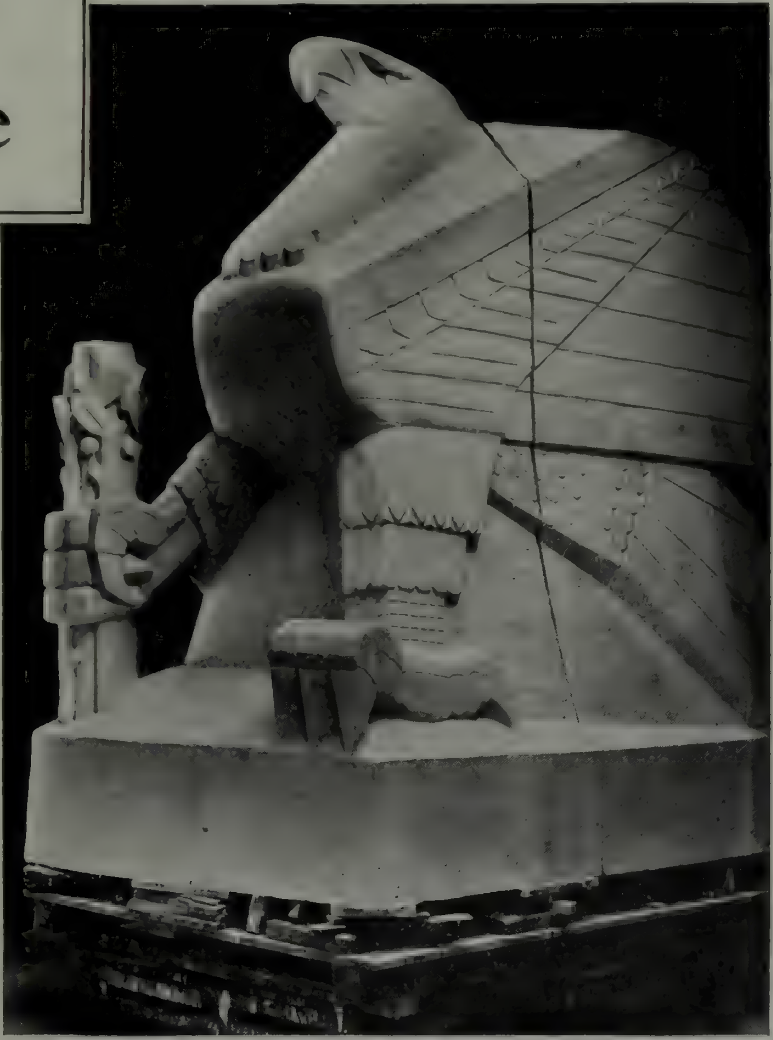

One of the two eagles which top the pylons at west end of bridge. Each eagle consists of 35 pieces of Gray Indiana Limestone and weighs 392,500 pounds. Lee Lawrie, Sculptor.

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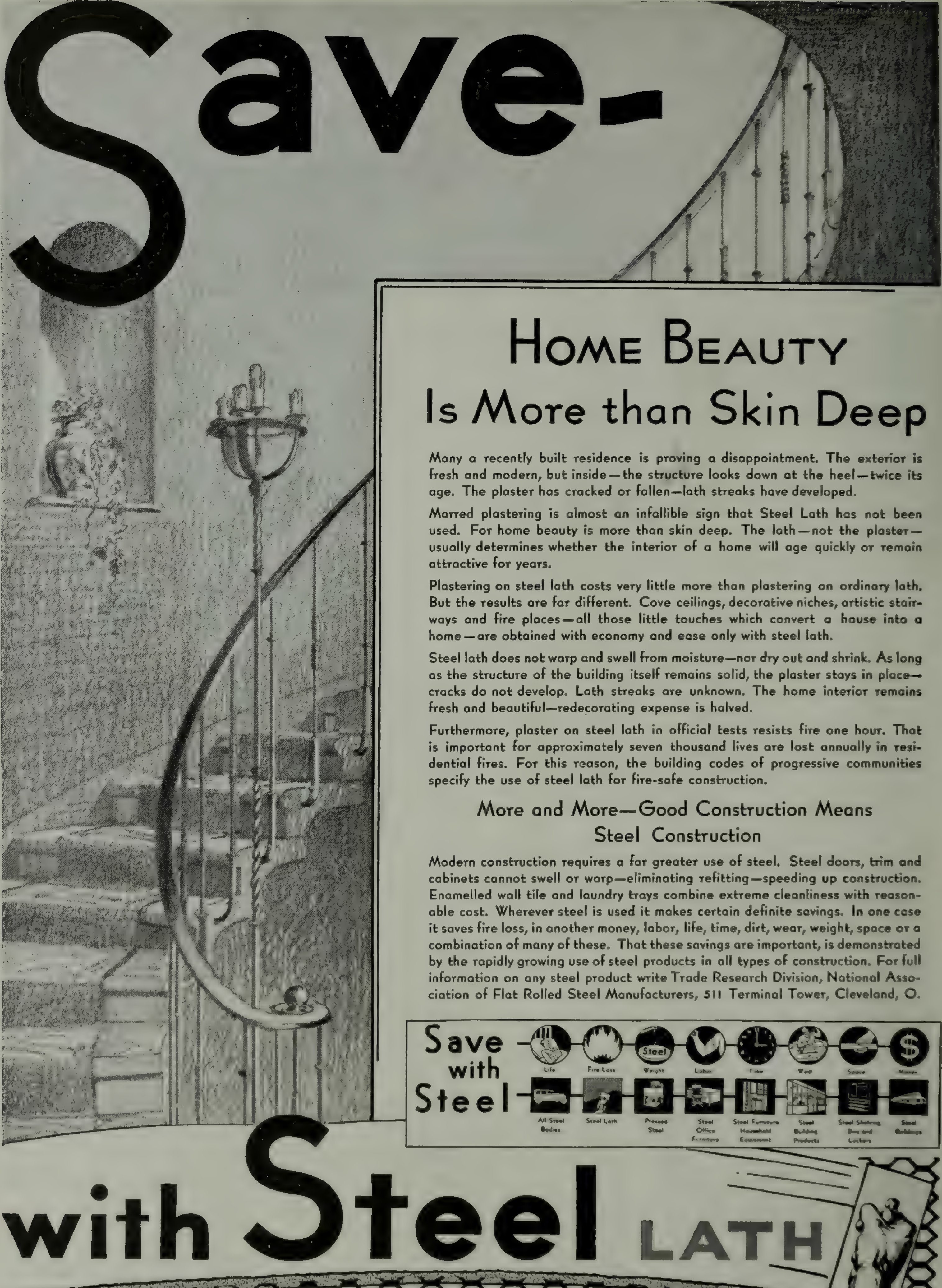

Save-

HOME BEAUTY

Is More than Skin Deep

Many a recently built residence is proving a disappointment. The exterior is fresh and modern, but inside—the structure looks down at the heel—twice its age. The plaster has cracked or fallen—lath streaks have developed.

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with Steel LATH

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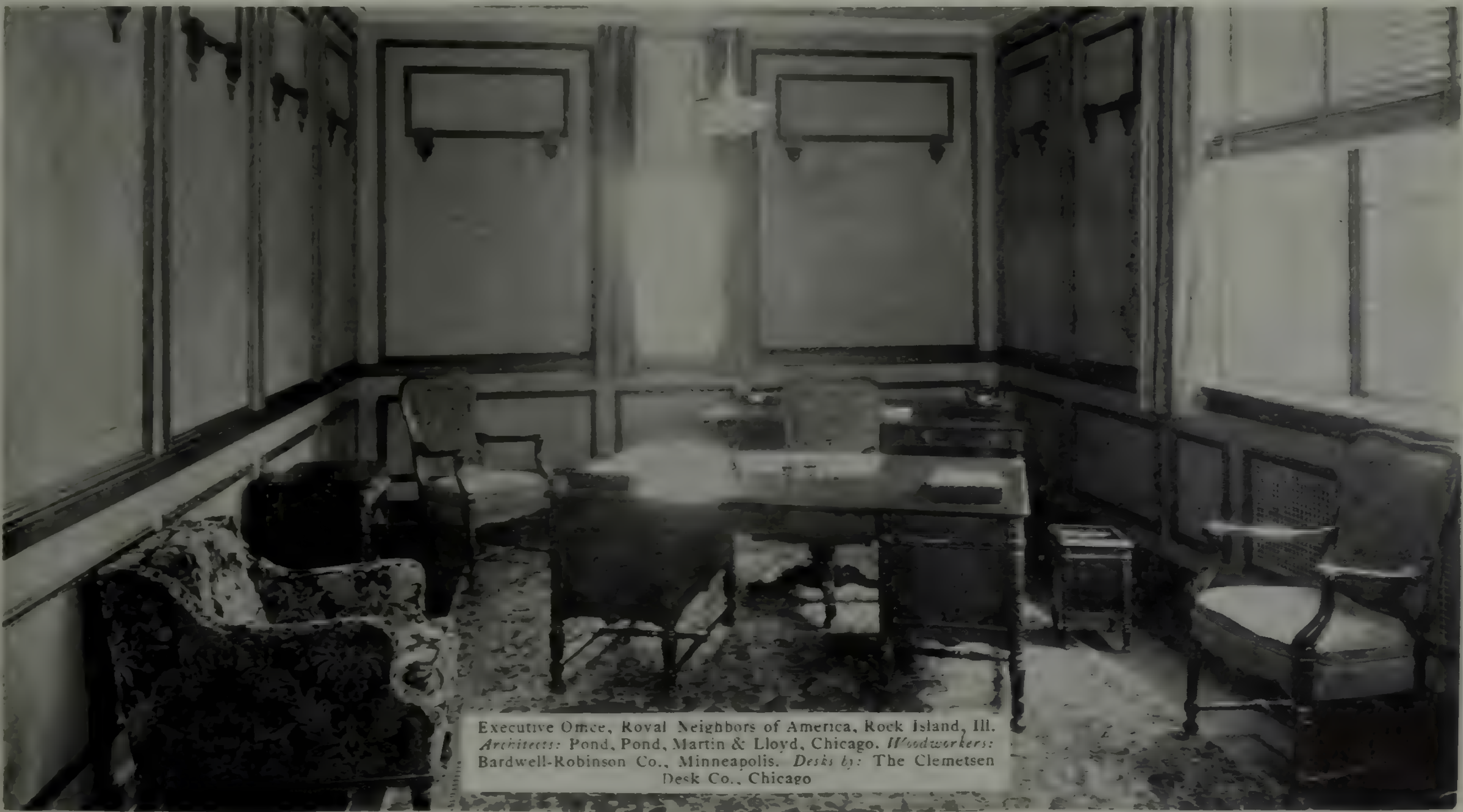

Executive Office, Royal Neighbors of America, Rock Island, Ill. *Architects:* Pond, Pond, Martin & Lloyd, Chicago. *Woodworkers:* Bardwell-Robinson Co., Minneapolis. *Desks by:* The Clemetsen Desk Co., Chicago

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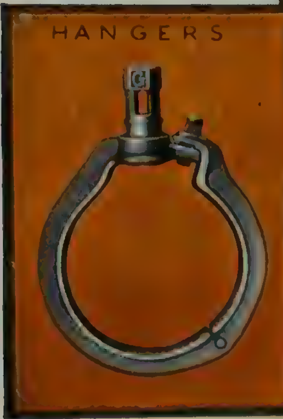
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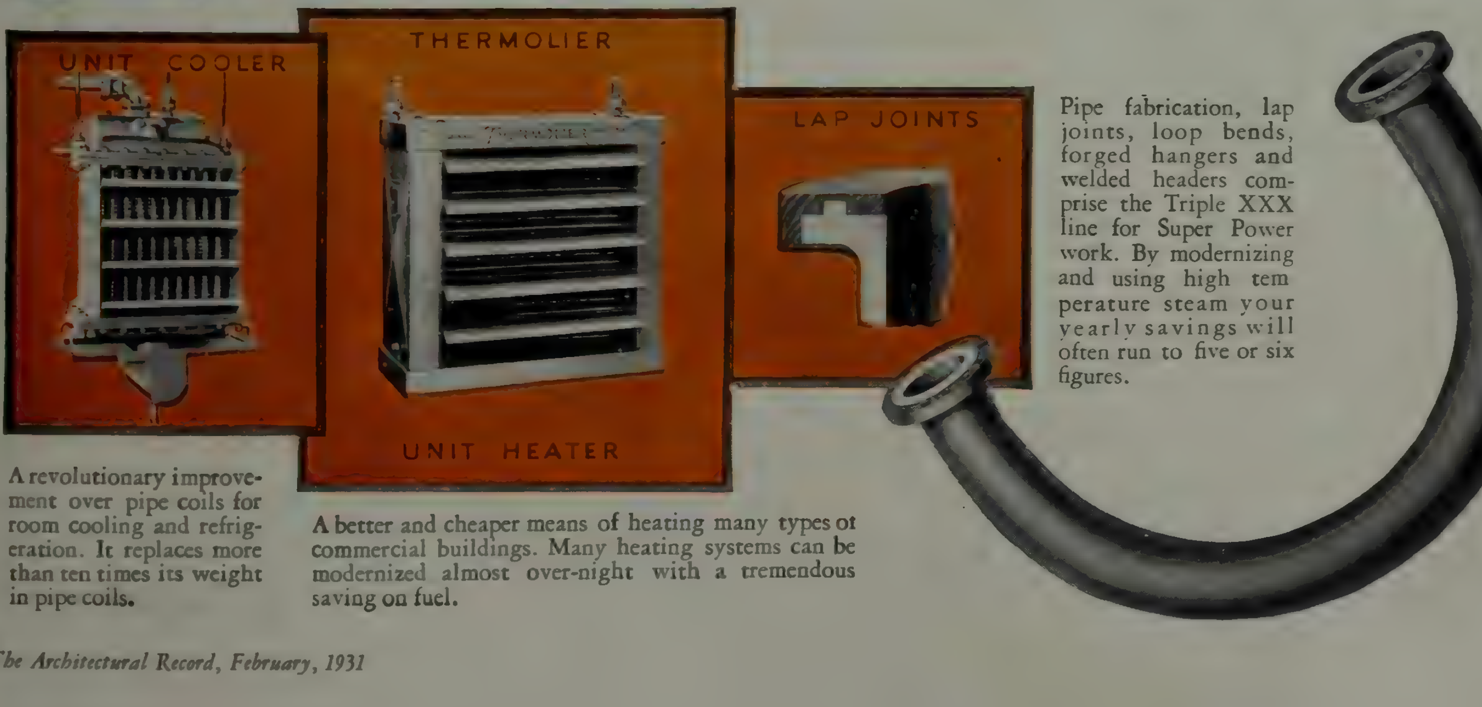

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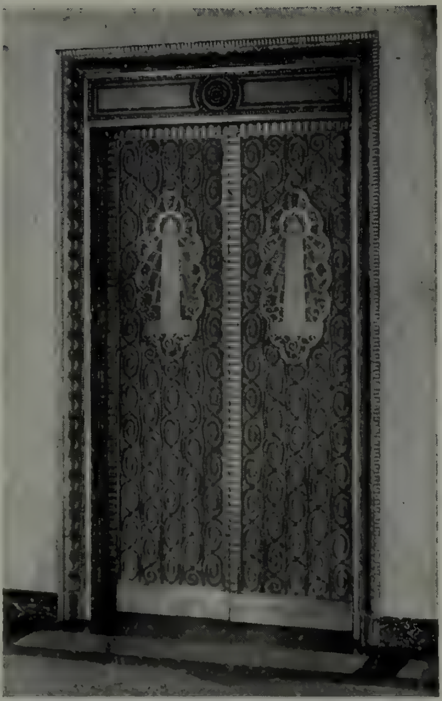
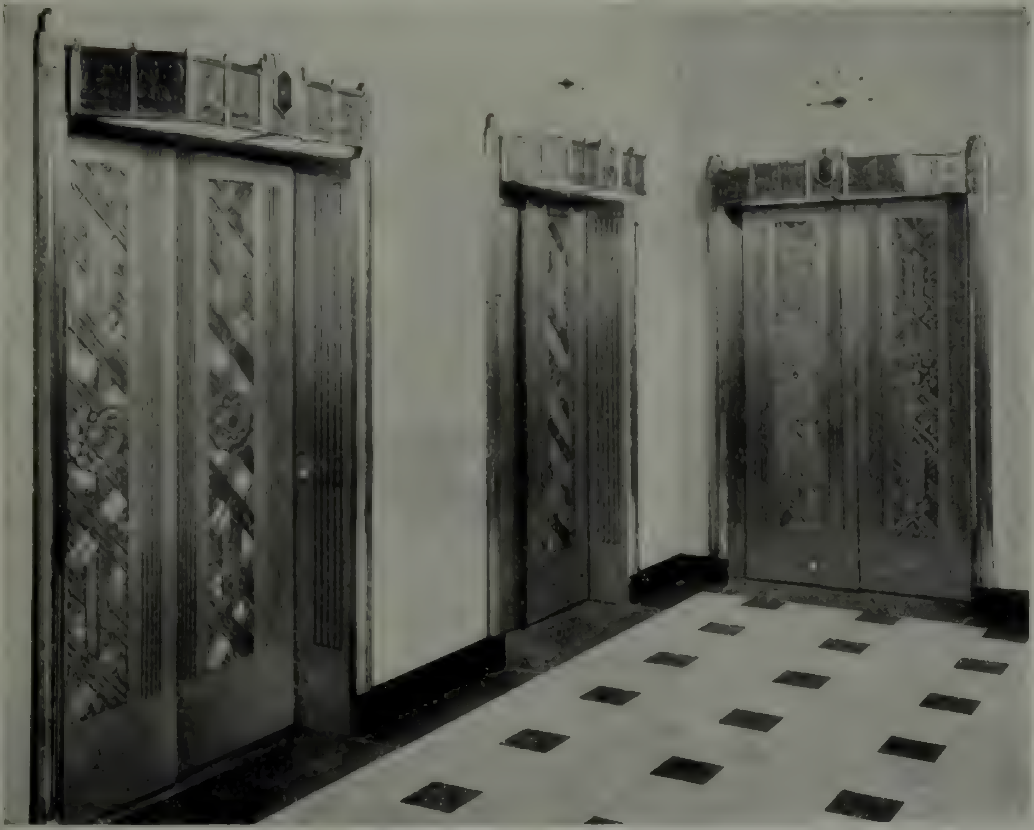
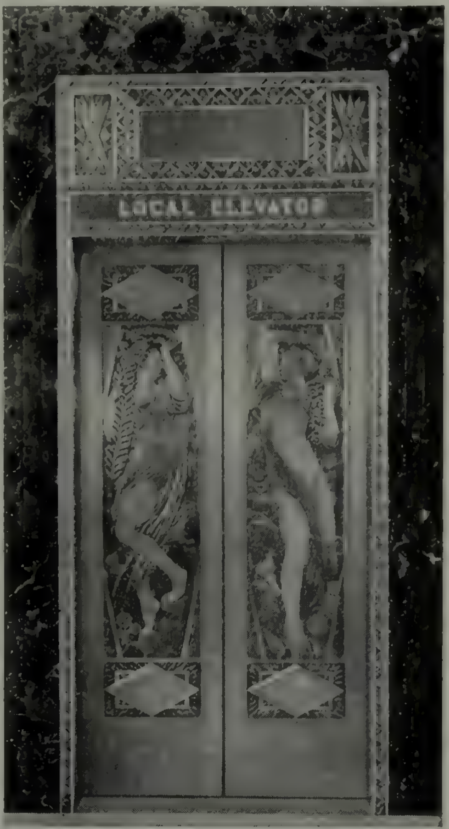


Foshay Tower, Minneapolis, Minn.— Wrought Iron Elevator Doors with cast bronze inserts. *Architects:* Magney & Tussler.



Chicago Daily News — Elevator Doors, nickel silver. *Architects:* Holabird & Root.



1 La Salle Street, Chicago, Ill. — Elevator Doors, bronze. *Architects:* K. M. Vitzthum Co.

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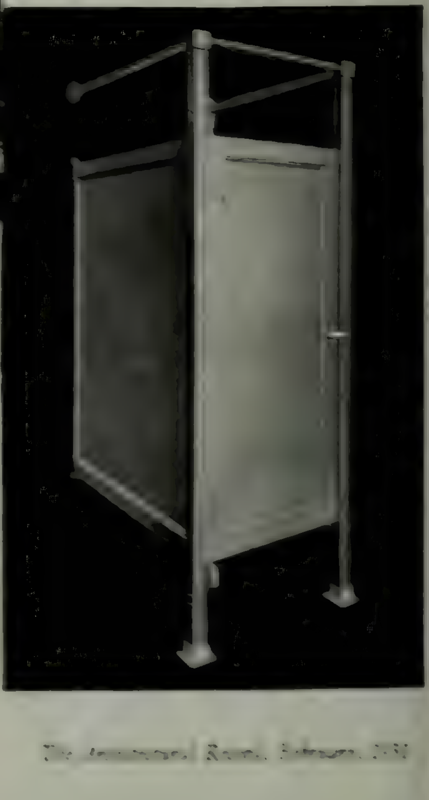

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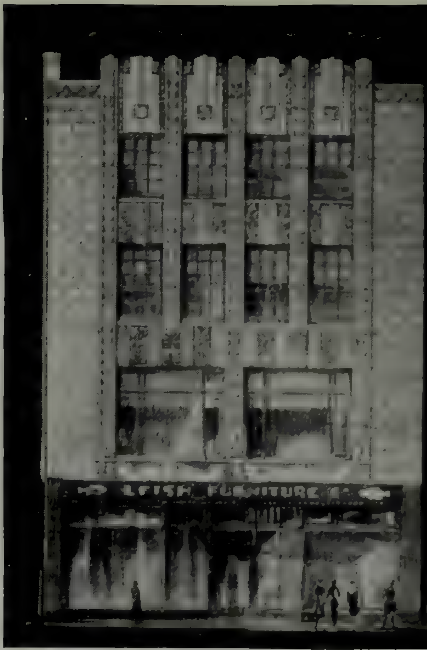

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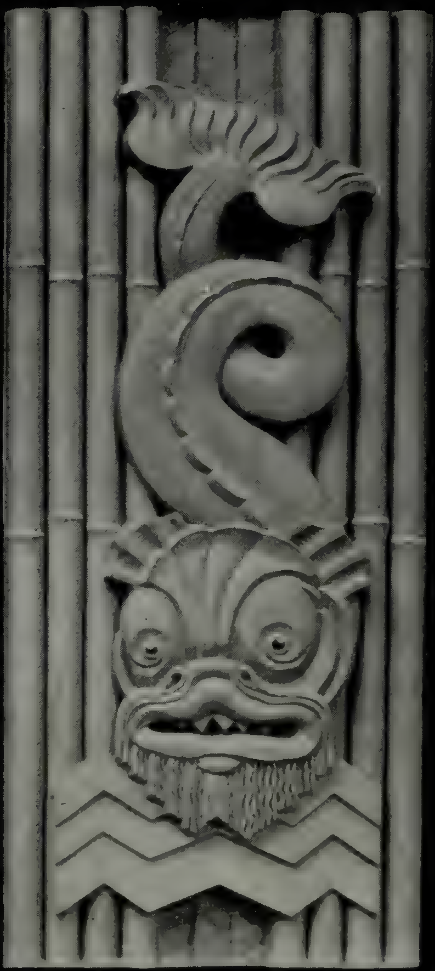

COLORS: First story
blue glaze
Upper stories
white glaze
Background of ornament
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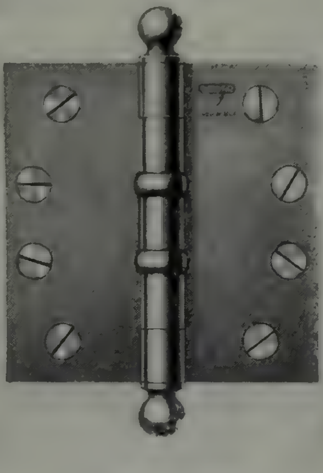

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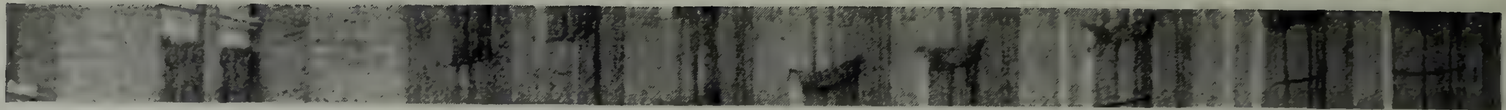

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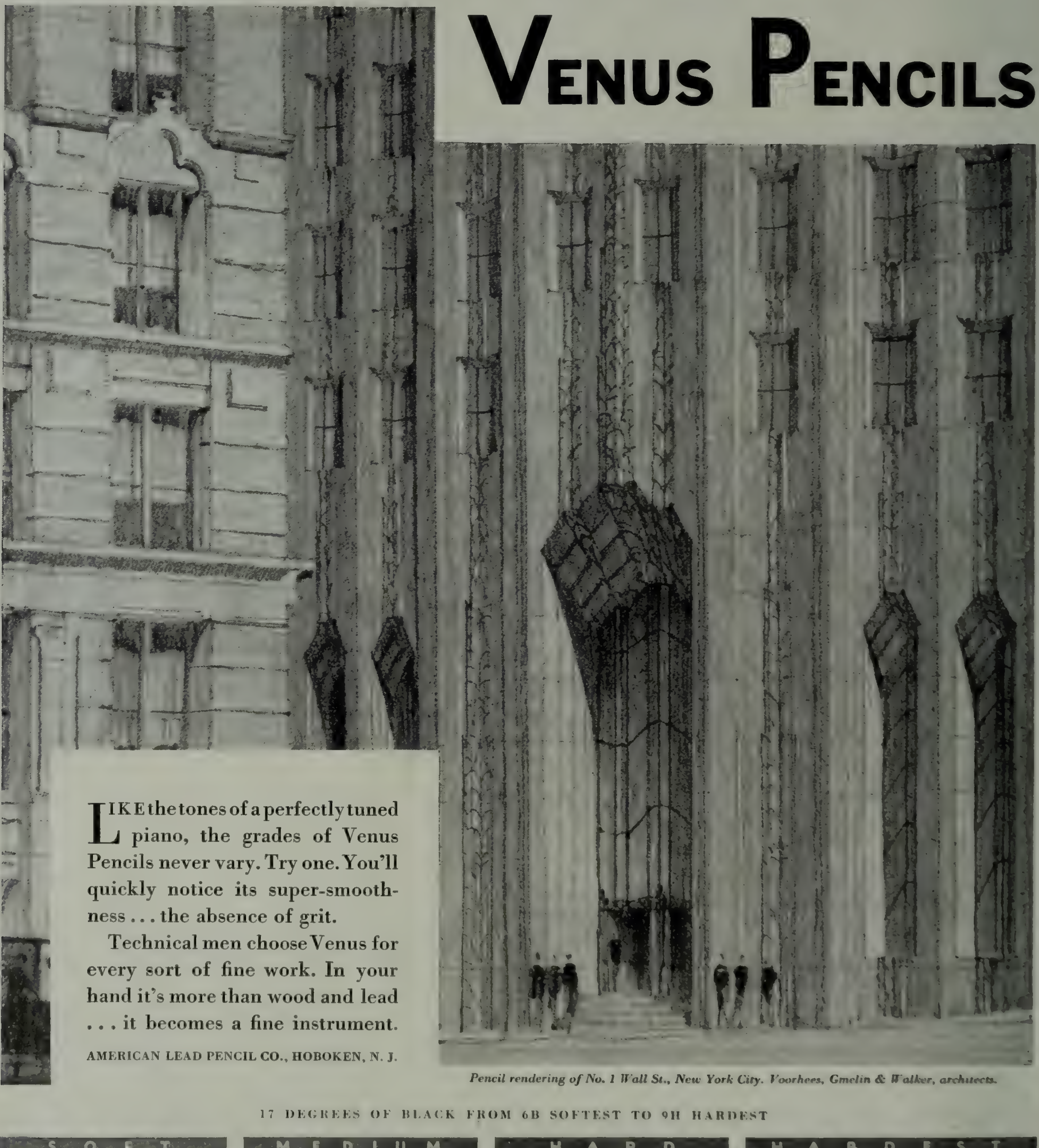

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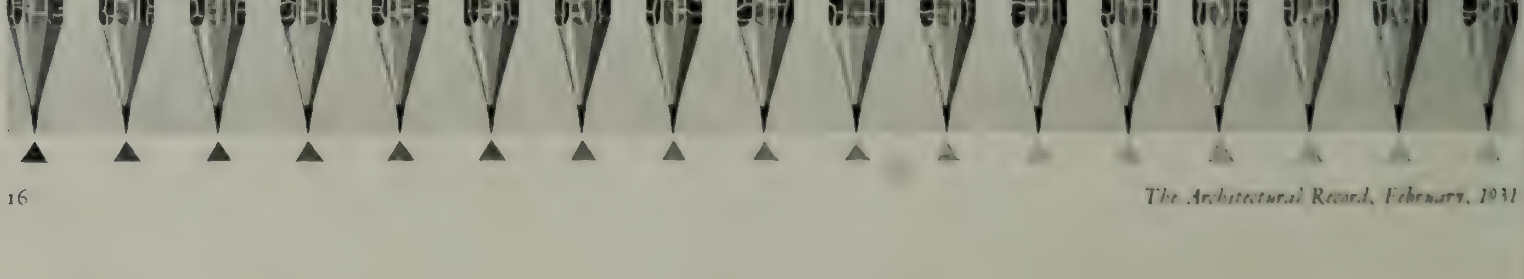
Pencil rendering of No. 1 Wall St., New York City. Voorhees, Gmelin & Walker, architects.

17 DEGREES OF BLACK FROM 6B SOFTEST TO 9H HARDEST



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*Makers of the *Herman Nelson Invisible Radiator*, for residences, apartments, hotels, offices and monumental structures — the *Univent*, for the ventilation of schools, offices, churches and all buildings having an acute ventilating problem — the *Herman Nelson hiJet Heater*, for economical distribution of heat in factories, mills, garages, warehouses, and smaller buildings.

Alcoa Aluminum expresses both the grace and the vigor of today's design ✓ ✓ ✓ ✓

Entrance doors, exemplifying the adaptability of Alcoa Aluminum. (*See above*)

A strikingly pleasing effect is obtained by the use of Alcoa Aluminum for all visible metal. (*See above*)

The Howard Avenue Trust & Savings Bank Building, Chicago; Architect—*Jens J. Jensen;* General Contractor—*Wm. G. McNulty & Bro., Chicago.* Ornamental Metal Contractors—*The E. M. Weymer Co., Inc., Chicago, and The American Iron and Wire Works, Chicago.*

The entire vault gate construction is fabricated out of Alcoa Aluminum. (*See above*)

IN design and detail, the Howard Avenue Trust & Savings Bank Building, Chicago, expresses both grace and vigor.

Using Alcoa No. 43 Aluminum Alloy—the architect, Jens J. Jensen, has secured a pleasing combination of strength, durability and softness of tone—an effect in evidence in front door and vestibule grilles, lobby door frames and grilles, mail box, balcony and stair railing, vault grilles and screen.

Alcoa Aluminum is produced in cast, extruded and sheet form. In any form it is easily worked and finished. It is remarkably light —1/3 the weight of other metals commonly used—but it is strong and tough. It is eminently adaptable for exterior use as it resists corrosion—does not streak adjoining surfaces. And, with all its virtues, Alcoa Aluminum is low in cost—comparable to other metals which do not possess its specific advantages. These important advantages are putting Alcoa Aluminum at the architects' disposal for spandrels, mullions, sills, door frames, grilles and for many other purposes.

SPECIFICATIONS

Alcoa No. 43 Aluminum Alloy is recommended for most architectural purposes. To meet the numerous demands for structural stability, Alcoa Aluminum alloys are available in various tensile strengths. In each of our offices we have competent representatives with a wealth of experience as to the decorative and structural uses of each of the special Alcoa Aluminum alloys. The services of these representatives are available to the designer and the specification writer. May we urge you to accept this cooperation without obligation in designing and writing specifications for buildings in which Alcoa Aluminum alloys will form a part? ALUMINUM COMPANY *of* AMERICA; 2467 Oliver Building, PITTSBURGH, PENNSYLVANIA.

Hand rails, grilles and night deposit box as well as elevator door frames are wrought of Alcoa Aluminum. (*See below*)

ALCOA ALUMINUM

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SANACOUSTIC
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THE NEW INSULATED SOUND ABSORBING CEILING AND ROOF

Combines in ONE UNIT:

A Perforated Steel Ceiling
and Roof Deck of
Copper Bearing Steel

Supporting

Sound Absorptive
Rock Cork
and Insulation

Weathered by

Alternate Layers of Asphalt
and Asbestos
Built-Up Roofing.

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Keeps Winter Heat In
Keeps Summer Heat Out
Reduces Noise

APPLICABLE to all buildings where the under side of the roof deck forms the ceiling — such as gymnasiums, factory administration buildings, field houses, and certain types of auditoriums, theaters and schools.

The Fenestra Sanacoustic Holorib Unit combines 82% absorption at a frequency of 512, with a coefficient of heat transmission of .15 B T Us per hour. It provides this high degree of sound-quieting and heat-stop value at a cost far below that of other materials of equal efficiency.

It is always applied under governing specifications which include J-M Rock Cork, Insulation, Roofing Asphalt and Built-Up Roofing, thus insuring an acoustically treated ceiling on the under side, and an insulated, weather-proof, long-lived roof above.

Full details and quotations may be obtained from the nearest Fenestra representative or direct from

DETROIT STEEL PRODUCTS COMPANY
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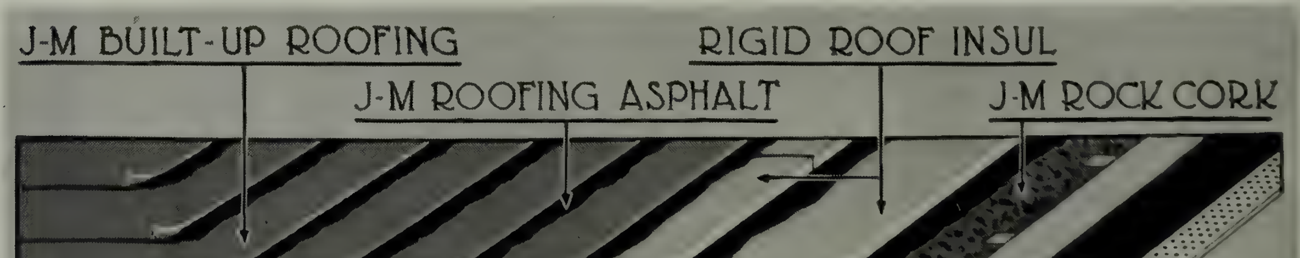

10 years old . . .

and who'd ever guess it?

It keeps its good looks— does this window shade

THE Manufacturers Trust Co., N. Y., has had TONTINE shades at its windows for the last ten years and they're still going strong. The shades, in fact, are quite cheerfully beginning their second ten-year stretch. Every once in a while they come down for a scrubbing. Then up they go again—fresh, and clean, and new-looking.

That's the advantage of having TONTINE shades. They're washable. Think how much that saves in replacement costs.

TONTINE shades are impregnated with pyroxylin, the basic material used in the famous Duco finishes. This pyroxylin base makes TONTINE shades washable. It also makes them durable. They don't fray, pinhole or crack. They don't spot in rain, or fade in sunlight. They stand up for years against ordinary wear, hard wear, and downright careless usage.

That's why large buildings all over the country are being equipped with TONTINE shades. Schools, hotels, apartments, office buildings, hospitals find TONTINE shades the most economical and generally satisfactory of all shades. For complete window-shade satisfaction, have your TONTINE shades mounted on TONTINE Rollers.

We'll be glad to send you samples of Tontine shades. Your name on the coupon below will bring them to you by return mail.

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Manufacturers Trust Company, Columbus Circle, New York. For ten years, no less, Tontine Washable Window Shades have been in use in this building. They've been subject to dust and dirt, wind and rain—and they're still good for years more of good hard service.

DU PONT TONTINE
REG. U.S. PAT. OFF.
(PRONOUNCED TON-TEEN)

THE *WASHABLE* WINDOW SHADE

E. I. DU PONT DE NEMOURS & CO., INC.
Desk AR-1, Newburgh, N. Y.

Please send me samples of, and complete information about, TONTINE Washable Window Shades.

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Consult the Classified Business Directory of your telephone book for the authorized TONTINE *dealer in your city, selected for his reliability.*

Higher Insulating EFFICIENCY

Full ½-inch thick. Light weight
Millions of dead air cells
Thermal conductivity 0.32 B.T.U.

Satisfies the most exacting requirements of an *Insulating Board!*

GREAT STRENGTH

Made entirely of NEW Wood Fibre.

UNEQUALLED PLASTER BOND

2,140 lbs. per sq. ft. Compare this with any other plaster base!

LIGHTER WEIGHT

600 lbs. per thousand sq. ft.

Architects who have made a special study of insulating materials are enthusiastic about Cornell In-Cel-Wood—the new insulating board made entirely of *new wood fibre.* The greater *thickness* of this board—full ½″ thick—and its *lighter weight* assure highest insulating and sound deadening efficiency. In-Cel-Wood weighs only 600 pounds per thousand square feet.

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Specify Cornell In-Cel-Wood for use as sheathing and insulation in outer walls, as insulation under roofing, above ceilings and under flooring—and Cornell In-Cel-Wood Lath (In-Cel-Wood with special shiplapped edges) as insulation and a plaster base for inner walls. Attractive cream color; may be left undecorated. Made to the highest standard of quality as insisted upon for all Cornell products for the past eighteen years. In-Cel-Wood is supplied in standard sizes: 4 feet by 6, 8, 9, 10 and 12 feet—all full ½-inch thick. In-Cel-Wood Lath panels are 18 inches by 48 inches—full ½-inch thick. Write today for samples and complete details. Cornell Wood Products Company, 307 North Michigan Avenue, Chicago.

Cornell
IN-CEL-WOOD
"It's in the Cells"

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FRIGIDAIRE

Signs read "Sold" and "Rented"

when buildings are equipped with Frigidaire

Drake Apartment Building, Philadelphia, Pennsylvania, is equipped with Frigidaire. Ritter & Shea, Architects, Murphy - Quigley, Builders.

Anything that cuts building, selling or renting costs is a good thing for architects to put into practice.

And some of the shrewdest architects, builders and contractors say that *one* thing accomplishes *all* of these results—*Frigidaire as part of the kitchen equipment.*

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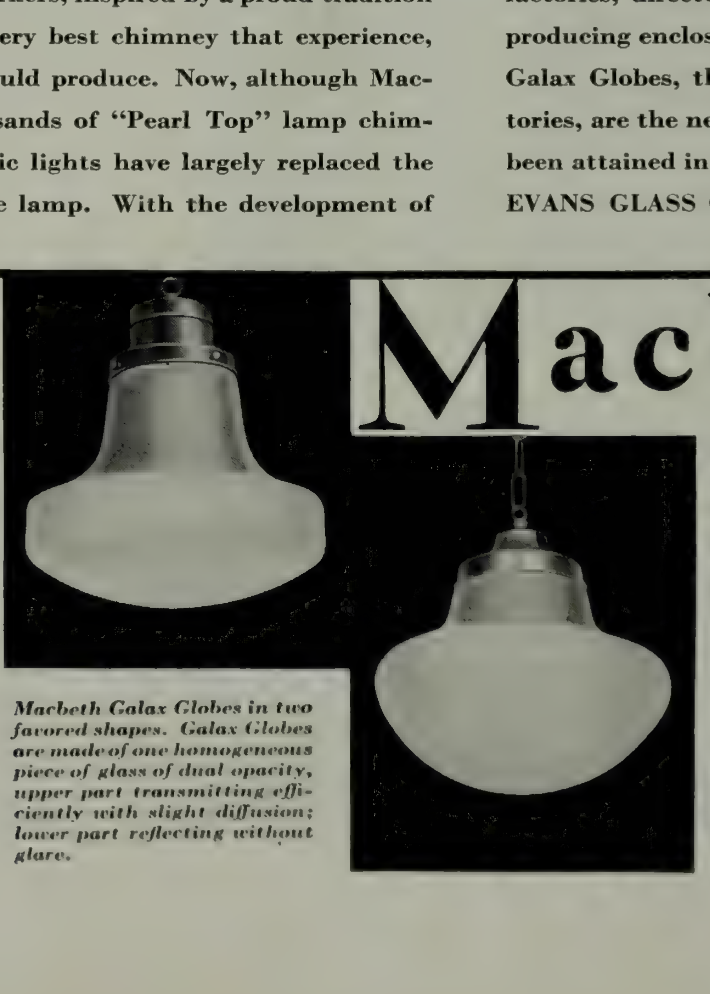
A GENERAL MOTORS VALUE

REMEMBER THE KEROSENE LAMPS OF YOUR KNEE-PANTS DAYS?

Remember, too, when *you* were a boy, trudging along to the store . . . saying over and over to yourself . . . "Macbeth Pearl Top Chimney . . . Macbeth Pearl Top . . . Macbeth Pearl . . ." It was *always* "Macbeth Pearl Top" because Mother knew they were far better than any other kind. She knew from experience . . . They were *best* because Macbeth glassworkers, inspired by a proud tradition of *quality*, made the very best chimney that experience, knowledge and care could produce. Now, although Macbeth still makes thousands of "Pearl Top" lamp chimneys every year, electric lights have largely replaced the old-fashioned kerosene lamp. With the development of electric lamps, the need arose for enclosing globes to diffuse the light and shade the eyes from excessive glare. And in the manufacture of these globes, Macbeth occupies the same position of leadership, pioneering in the development and manufacture of scientifically designed globes to meet changing conditions. Today, Macbeth factories, directed by a corps of expert technologists, are producing enclosing globes of the most advanced type . . . Galax Globes, the newest development of Macbeth factories, are the nearest approach to perfection that has yet been attained in semi-indirect lighting. ↘ ↘ MACBETH-EVANS GLASS COMPANY ↘ ↘ Charleroi, Pennsylvania.



Macbeth Galax Globes in two favored shapes. Galax Globes are made of one homogeneous piece of glass of dual opacity, upper part transmitting efficiently with slight diffusion; lower part reflecting without glare.

Macbeth

GALAX LIGHTING GLOBES

The Medinah Athletic Club, Chicago. Walter W. Ahlschlager, architect. The USG System of Sound Insulation is used to prevent the transmission of noise from bowling alleys, rifle range and elevator machinery and to provide quiet telephone booths. Sabinite Acoustical Plaster is also used in various rooms throughout the club.

It is now possible for USG Sound Control experts to determine scientifically the cause of various noises and to test the efficiency of sound insulating materials and methods.

(At Left) In many radio broadcasting stations, where perfect sound control is absolutely essential, the USG System of Sound Insulation is now being used with great success.

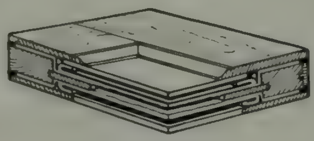
Why Architects Consult USG Engineers on Problems in Sound Control

A Message to Architects from the United States Gypsum Company

• • • •

MANY leading architects consult USG sound control engineers when called upon to specify materials and methods for insulating against undesirable noises. They have found their services thoroughly reliable in analyzing any acoustical problem and in prescribing corrective treatment.

The United States Gypsum Company supplies not one but many materials and methods for controlling sound. USG engineers are therefore in a position to make recommendations to meet the requirements of the *job*—impartially and without prejudice. They are trained and equipped to diagnose all types of sound control problems and to predict definite results which can be depended upon.



Detail of USG Sound Insulative Door. This door prevents the transmission of sound from room to room.

Where it is desirable to confine disturbing noises to the room of their origin, the USG System of Sound Insulation has been used with great success. It is a highly efficient method, scientifically designed, to control sound by preventing the transmission of noise through walls, floors, ceilings and doors.

Architects have found the USG System of Sound Insulation a practical and thoroughly dependable method for insuring quietness in hotel and apartment rooms and for eliminating disturbances caused by noises emanating from ballrooms, elevator shafts, machine shops, kitchens, pantries, gymnasiums, etc. The cost is surprisingly low—usually amounting to but a fraction of the cost of the building.

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USG SYSTEM *of* SOUND INSULATION

FROM COAST TO COAST

THOUSANDS OF WINDOWS ARE BEING GLAZED WITH

LUSTRAGLASS

FLAT-DRAWN

In just a few short months, the demand for this new and modern window glass has swept the nation from coast to coast.

Architects and Builders, quick to recognize the outstanding advantages of LUSTRAGLASS, have expressed their preference in specifications resulting in a flow of orders so far in excess of our most optimistic expectations that the facilities set aside for LUSTRAGLASS production have proved entirely inadequate.

To meet this demand . . . another of our largest factories (equipped with the largest capacity window glass furnace in the world) is now being devoted to the manufacture of this new glass for windows. This assures prompt delivery of your LUSTRAGLASS specifications for 1931.

LUSTRAGLASS *transmits a substantial amount of the shorter (more effective) ultra-violet rays of sunlight.*

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It transmits more daylight.

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It is the "whitest" of all glass made for windows.

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Yet it costs no more than any good window glass.

SPECIFY LUSTRAGLASS INSTEAD OF WINDOW GLASS

This label appears on every light of genuine LUSTRAGLASS. Write for Booklet A-430 giving table of transmission and other interesting facts about the ultra-violet rays of sunlight and LUSTRAGLASS.

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FARMERS BANK BUILDING

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Also makers of Armor-Lite Shatter-Proof and Bullet-Proof Glass, Tintaglass, Lustrawhite Picture Glass, Photographic Dry Plate Glass, $\frac{3}{16}$" and $\frac{7}{32}$" Crystal Sheet, Ground and Chipped Glass, Improved Quartz-Lite and Bulb Edge Glass.

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THE wide recognition accorded Bayley by leading architects and prison officials is proof that these outstanding and exclusive features mark a new trend in prison construction.

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2. Efficient window as well as guard.
3. Super bar construction assures maximum safety.
4. Assembly of small openings gives adequate daylight, and at same time increases strength of window.
5. Ventilator does not impair safety.
6. Designed in cooperation with prison architects and officials.
7. Available in sizes to fit the smallest as well as the largest wall openings.

**Bayley Guard Windows are available in the Super Bar and the 1½″ Standard Tee Bar construction.*

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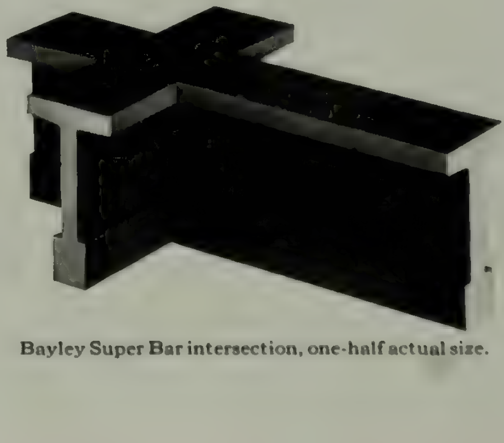
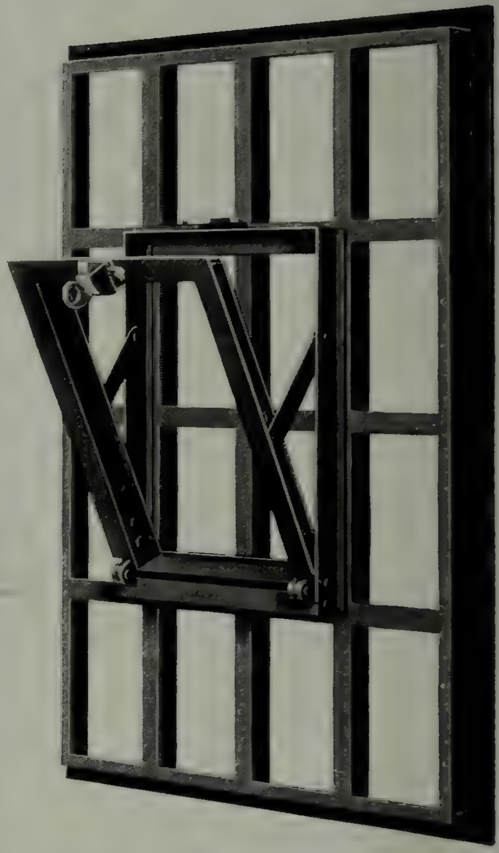
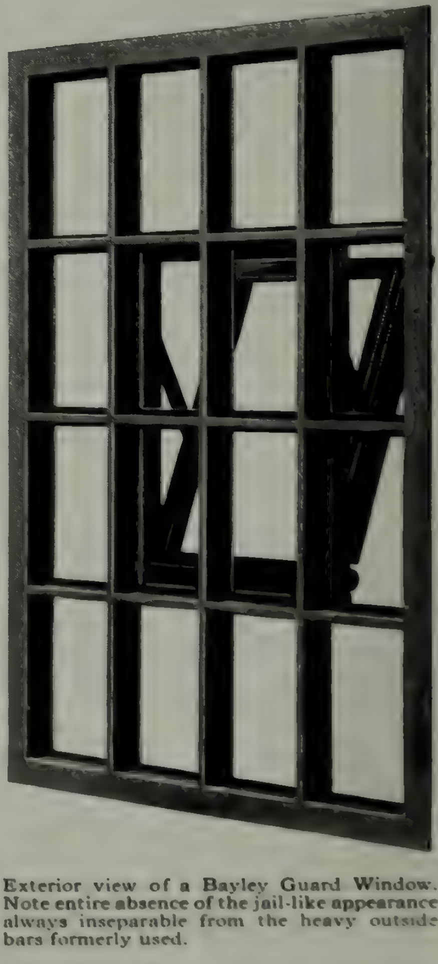


Bayley Super Bar intersection, one-half actual size.



Interior view of a Bayley Guard Window, showing ventilator in open position. Note that horizontal and vertical bars are continuous through ventilator opening. May be screened when desired.



Exterior view of a Bayley Guard Window. Note entire absence of the jail-like appearance always inseparable from the heavy outside bars formerly used.

CADET
MESS HALL

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West Point
New York
GEHRON & ROSS,
Architects

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Largest dining
room floor
in the
United States

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Why was
VERMONT SLATE
chosen for the Cadet Mess Hall Floor?

BECAUSE Vermont Slate is

colorful - *harmonious*
sanitary - *permanent*

—an area of 27,000 square feet installed in this building at a remarkably low cost from a detailed layout developed by us to incorporate the idea of a simple, yet distinctive, design desired by the architects. Produced by VERMONT STRUCTURAL SLATE COMPANY, Fair Haven, Vermont. Our catalogue is filed in Sweet's, Volume B, Page 3200.

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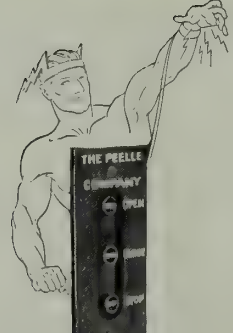
THE DOORWAY OF AMERICA'S FREIGHT ELEVATOR TRAFFIC



research . . . constant probing . . . ceaseless testing . . . modern industrial science places experiment on par with experience. For over a quarter of a century Peelle research has devoted itself to the specialized subject of shaftway enclosures. In the design and manufacture of Peelle Doors, in the construction of every operating unit, constant check by almost infallible tests, is standardized procedure. In Peelle Doors, engineering ingenuity combines basic sturdiness with mechanical simplicity, resulting in a product that serves and endures. A list of over 15,000 Peelle installations offers convincing testimony. Motorized . . . Peelle Doors afford automatic entrance and exit at the touch of a button . . . saving time, labor, and speeding the flow of vertical traffic. Write for catalog, or consult our engineers.

PEELLE
MOTORIZED
FREIGHT ELEVATOR
DOORS

THE PEELLE COMPANY, BROOKLYN, NEW YORK
Boston Chicago Cleveland Philadelphia Atlanta and 30 other cities
In Canada Toronto and Hamilton, Ontario

Reflection? No!
Reflection? Yes!

In examining the photograph below, you may remark the absence of light-reflection in the roofs.

Or you may observe that they reflect the wisdom of crowning such an outstanding residence with such an outstanding roof.

And either conclusion will be correct; but the latter is, of course, the burden of our message to you.

We only wish you could see it in real life: those Plymouth split-face granite walls, steel casement windows, lead-coated copper gutters and conductor pipes—

—and the beauty of these color effects and of the design enhanced by roofs of Sheldon's Unfading Green and Weathering Gray Slates, two inches thick at the eaves, decreasing to ¼ inch at the ridge.

You would agree that these roofs reflect wisdom.

Residence of George F. Rand
Architects: Edward B. Green and Sons and Albert Hart Hopkins } All at Buffalo, New York
Roofers: Machwirth Brothers

F. C. SHELDON SLATE CO.

GENERAL OFFICES · GRANVILLE · N · Y ·
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Careystone Shingles

THE NEW ROOF *With* THE "WEATHER AGE" TEXTURE

CAREYSTONE SHINGLES—a more beautiful roof, with a veined, rippled surface which softens the sunlight and deepens the shadows. A more permanent roof, unaffected by the weather and requiring no attention. A fireproof roof, made entirely of two non-combustible substances, Asbestos Fibre and Portland Cement. And, best of all, these superior shingles cost about the same as smooth surface roofs.

Behind this achievement is more than a half century of successful manufacturing experience, years of patient research, and an ambition to produce a roof covering suitable for the most elaborate structures, but which could be economically used on the small home where first cost is important.

Careystone Shingles are made in several widths, and in five colors—Windsor Gray, Weathered Brown, Georgian Red, Bristol Green and Tudor Black. The colors are solid thru and thru, not veneered or pressed into the surface.

In order that architects may know the appearance and quality of Careystone Shingles, we have made up packages of miniature samples, which will be mailed on request. Write today for your set.

THE PHILIP CAREY COMPANY ✖ Lockland, Cincinnati, Ohio
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ELASTITE EXPANSION JOINT
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EST. 1873

HEAT INSULATIONS
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CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS

CRAFTSMANSHIP *of masters to guarantee superior lighting*

A "GUILD" of craftsmen has grown up within the very plant in which Celestialite is made. Here father has handed down to son the difficult art of glass-blowing—of forming with infinite care and exactness the globes through which properly filtered light is to stream.

From the instant that the hollow steel pipe is first dipped into a fire-clay retort of glowing molten glass—Celestialite is in the hands of craftsmen of well-nigh miraculous skill, men whose pride in a perfect product is the paramount consideration.

In a sense, therefore, Celestialite is not manufactured—it is created. Every globe is the individual product of a master-craftsman's artistry. But it is only natural that to produce a light that is so close an approximation of daylight demands precisely this care, this distinguished craftsmanship.

In magnificent offices—the Metropolitan Life Insurance Company; Bonbright & Company, Wall Street; The Scientific American; the Santa Fe Building in Dallas, Texas and others—where quality in equipment is the objective and not price, Celestialite lighting glassware performs its beneficient function, saving eyesight and strain, preventing glare and dimness, supplying at the turn of a switch "next-to-daylight" lighting.

CELESTIALITE'S
three layers:
The Reason for its Superiority

[1] A layer of crystal clear transparency—for body and strength.

[2] A layer of white glass—to diffuse the rays and soften the light.

[3] A layer of blue glass—to whiten and improve the quality of the light.

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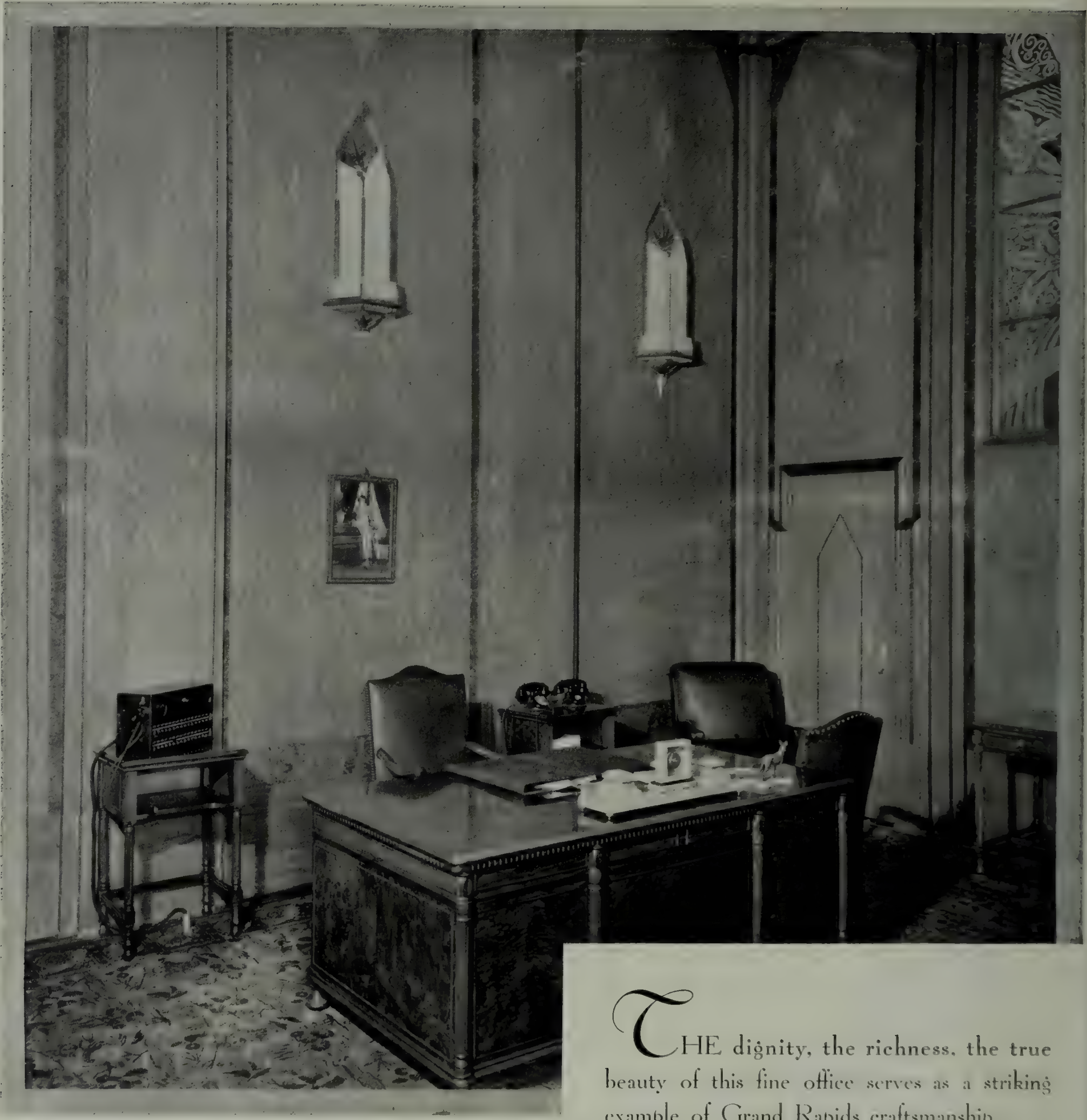
The Celestialite installation in the Parke, Davis offices is shown at the right. Write us at once for information that will secure you as fine a lighting system. We will also send you free a fragment of Celestialite, showing its three-layer construction.

CELESTIALITE

(Registered and Patented)

"NEXT TO DAYLIGHT"

Gleason-Tiebout Glass Co., 200 Fifth Ave., New York



THE dignity, the richness, the true beauty of this fine office serves as a striking example of Grand Rapids craftsmanship.

To architects whose requirements demand the best in cabinet work the Grand Rapids Store Equipment Corporation offers an incomparable service. Nowhere else are available the resources of materials, the talent, or the manufacturing facilities found in our nine great plants. Small wonder that leading architects are using Grand Rapids service in many outstanding buildings.

We welcome your request for full information.

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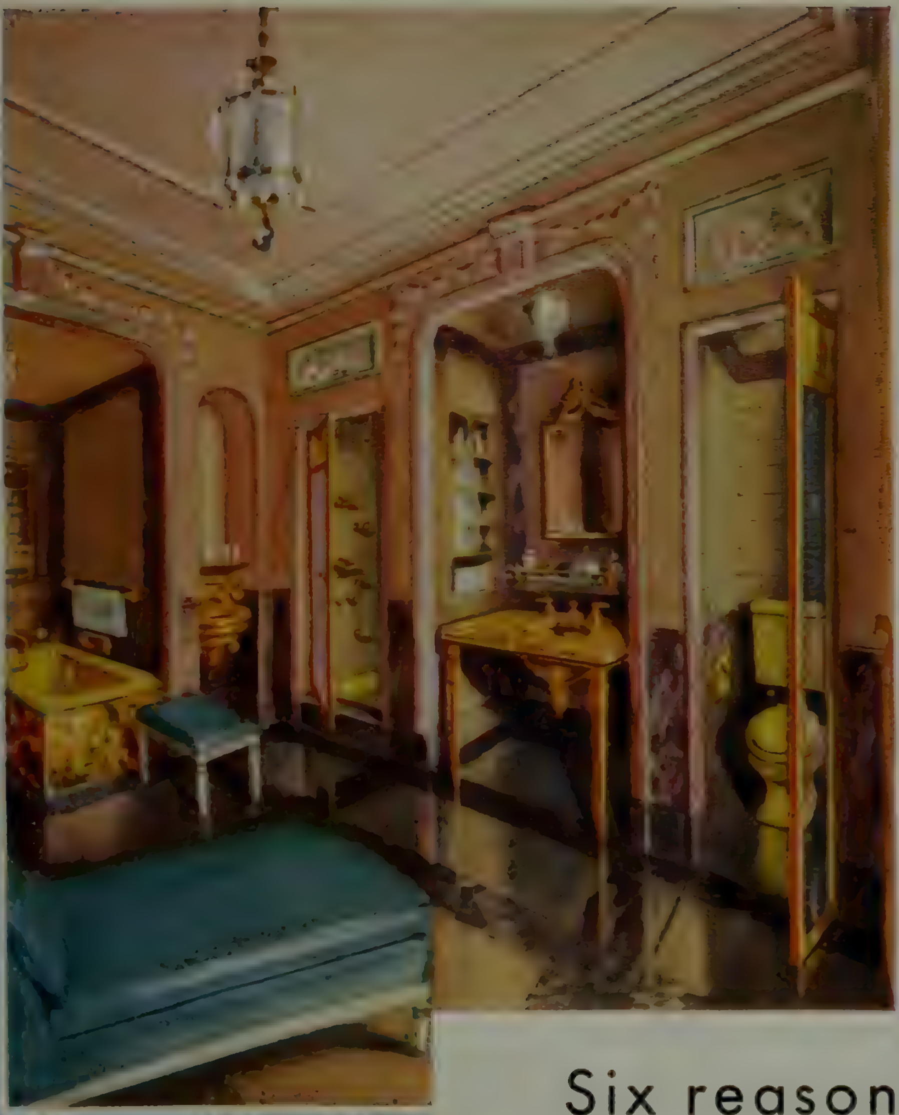

CRANE LOUIS XVI
TRIANON FITTINGS
GOLD PLATED

Six reasons why Architects should visit Crane Exhibit Rooms

Rich resources of the world have been brought together by Crane Co. to help architects create a new, distinctively American room . . . the bathroom of today.

From Italy was imported the Brocatello Sienna marble of the *Chateau* lavatory and the dental lavatory illustrated above. The designs of the lavatory and the Louis XVI metal-work and trimmings used throughout this bathroom are the work of French artists. The colored porcelain of the marble-enclosed *Tarnia* bath and the vitreous china of the closet, reviving an ancient and beautiful art, were produced by Crane potteries in America. The working parts of the quiet *Corwith* closet, the sure-action pop-up *Accesso* bath waste, the mechanical perfection of the glass-enclosed shower, have been developed by the most resourceful modern production engineers.

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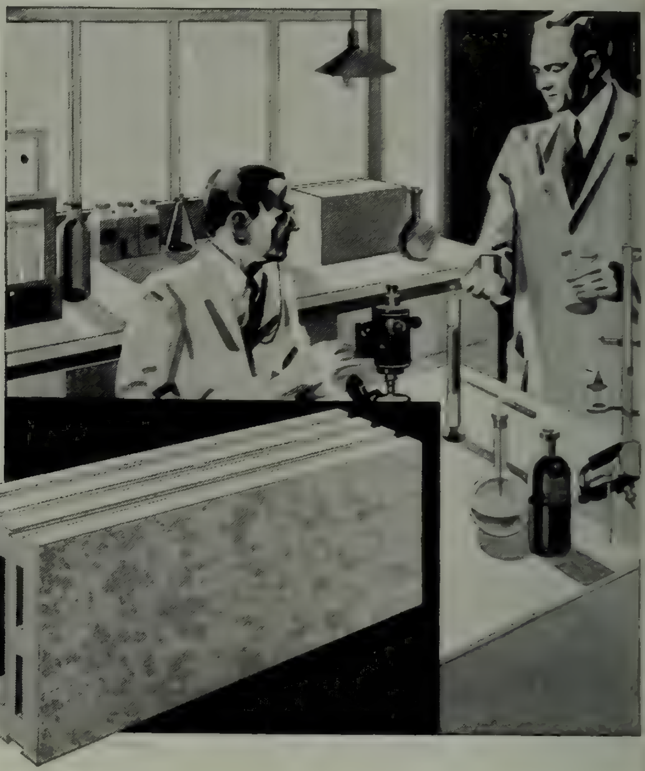

The Hand of Science with a Brush of Flame Paints Walls in Imperishable Colors for You

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Natco Glazed Vitritile is furnished in plain and mottled colors, in a wide variety of shapes that meet every structural need. Turn to Sweet's, A-677-730; or write for complete details.

NATCO
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The New Use for Natco Clay Conduit—to house cables in masonry walls.

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The largest concern in the world manufacturing a complete line of Structural Clay Tile and Underground Clay Conduit.

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WEST BEND, WISCONSIN

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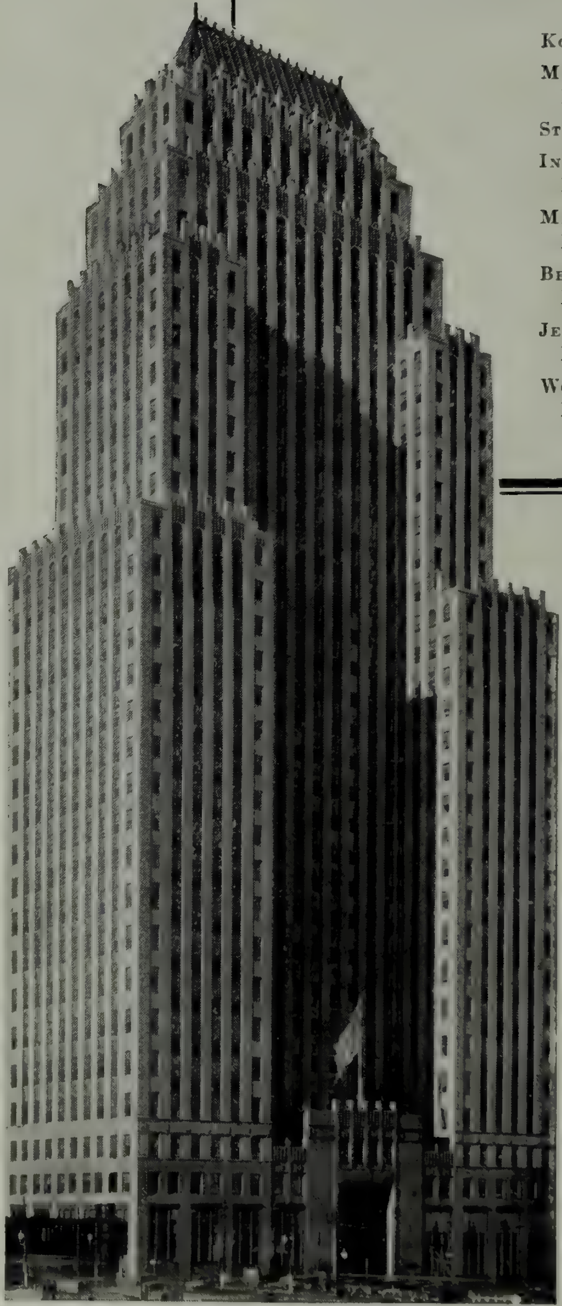
These buildings save space and heat with
CORK-INSULATED RADIATOR RECESSES

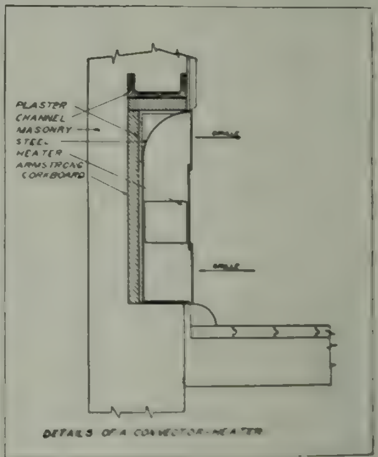


Koppers Building, Pittsburgh, Pa.
Merchandise Mart (Waiting Room), Chicago, Ill.
State Bank Building, Chicago, Ill.
Indiana and Michigan Electric Building, South Bend, Ind.
Meharry Medical College, Nashville, Tenn.
Benjamin Franklin High School, Rochester, N. Y.
Jefferson Junior High School, Rochester, N. Y.
Worthen Bank Building, Little Rock, Ark.

Pittsburgh's largest office building, the Koppers Building, architects Graham, Anderson, Probst, and White. Here Armstrong's Corkboard serves many purposes, including the insulation of radiator recesses.

~ ~ ~

This sketch shows how radiator recesses are being insulated in modern office buildings.



"GIVE us more rental space," building owners demand. So the architect fits heating units inside the walls of the building.

In modern structures these radiator recesses are insulated with Armstrong's Corkboard. Walls must be kept thin or there is no saving in space. But the thinner the walls, the more heat is lost through them—unless its passage is stopped. Heat must be thrown into the room to be effective—not conducted outdoors by brick or steel.

The insulating efficiency of Armstrong's Corkboard assures permanent service. Its resistance to moisture makes it last as long as the building itself. Structurally strong, it is easily worked for this or any other type of installation.

Many other uses

There are many places where Armstrong's Corkboard is serving building needs. For years it has insulated roofs of all kinds. Especially in factories, where "ceiling sweat" threatens damage to materials and machinery corkboard on the roof checks this danger. It makes it possible to maintain low temperatures in cold storage plants and quick-freezing rooms.

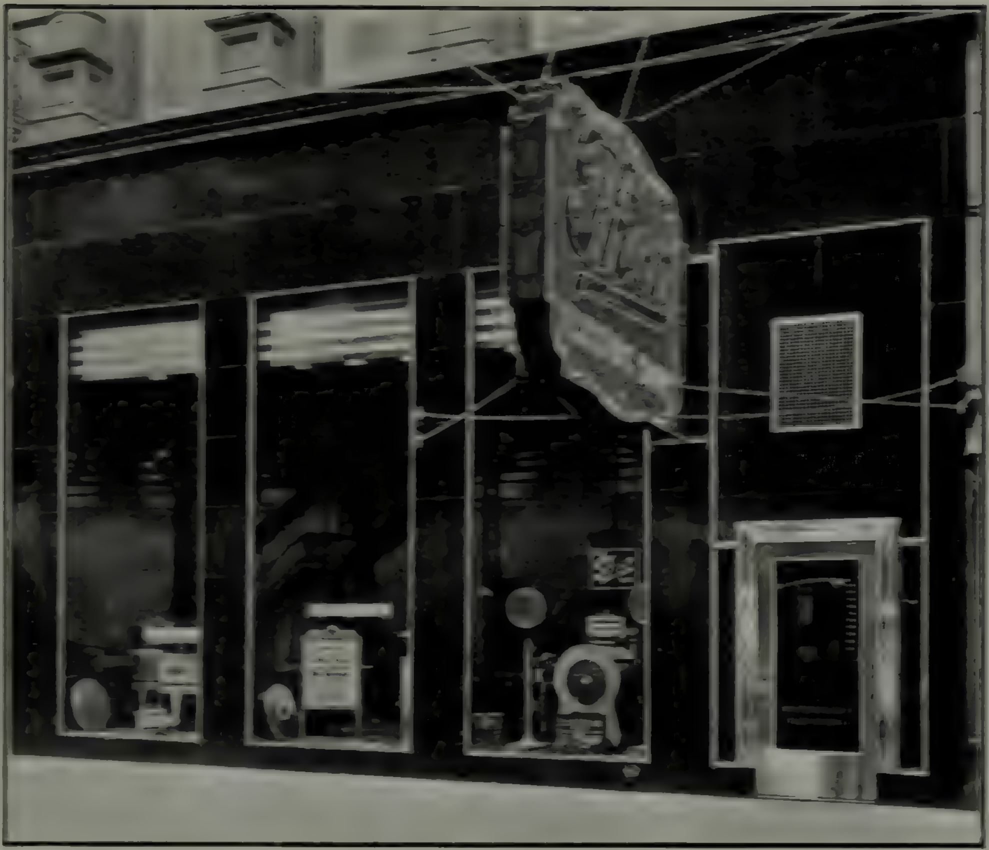
Because of its unique composition, cork is useful for many other purposes. Air-borne sounds can be muffled with cork. So Armstrong's Corkoustic, the cork acoustical material which lends itself to decoration, lines many school and theater auditoriums. Cork is resilient, too. Armstrong's Cork Machinery Isolation absorbs vibration and noise caused by all types of machinery. In the Koppers Building, for instance, vibration has been banished from air compressors and ventilating pumps by means of cork.

Every day sees some new use for cork. It may be just the material you are looking for now to do some special work, solve some puzzling situation. Armstrong engineers are always at your service for consultation. Armstrong Cork & Insulation Company, 901 Concord Street, Lancaster, Pennsylvania.

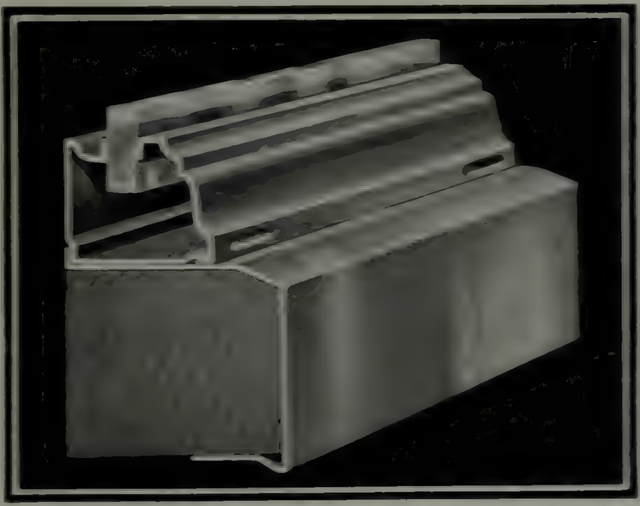
Armstrong's
Ⓐ
Product

Armstrong's Cork Products

CORKBOARD . . CORK COVERING . . CORKOUSTIC . . CORK MACHINERY ISOLATION . . INSULATING BRICK



The ultra-modern front of the Thor Shop in Chicago, worked out in white and black contrast with Brasco construction. Distinctive and different, this shop is an excellent example of the application of modern metals to store front design.



Brasco 606 Sash in Monel Metal. Illustration shows the self-supporting type used in conjunction with all sash. Gauge of sash face and back members .040" of sill .031". All attaching screws also of Monel Metal.

4 Metals
to Choose From

YOUR exclusive store front design can now be carried out in the metal most appropriate to its line and color.

To give you this opportunity for individual choice, Brasco has developed and perfected its constructions in *four* different metals—Monel Metal, introduced for the first time in this field, bronze, aluminum alloy and copper.

Thus style and distinction are linked in Brasco fronts with structural worth, permanence and safety, famous for years throughout the country.

Literature on all constructions, full-sized details and actual samples, clearly marked with the gauge of each member, gladly sent on request.

Brasco
STORE FRONTS

BRASCO MANUFACTURING CO.
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Who told these leading stores TO INVEST IN REAL AIR CONDITIONING?

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SANGER'S, Ft. Worth
WANAMAKER'S MEN'S STORE Phila.
TITCHE-GOETTINGER'S, Dallas
THE BON MARCHÉ, Seattle
VOLK BROS.', Dallas

AYRES', Indianapolis
LADIN'S, New Orleans
HUDSON'S, Detroit
KERNS', Detroit
BONWIT-TELLER'S, New York
ABBOT'S, Tulsa
MACY'S, New York

Who? Well, there was Simon and Simon for Strawbridge & Clothier's. And John Graham for Bon Marché. And Ely Jacques Kahn for Bonwit-Teller's. And Greene, LaRoche and Dahl for Volk Bros.' In almost every case, it has been the architects or engineers who have advised their clients to put their money into real air conditioning—*Manufactured Weather.*

Why? Because it's good business for the architect to do everything in his power to give his client a profitable store. Manufactured Weather makes a store comfortable the year round and attracts more customers.

How? By calling on Carrier, and the quarter century of air conditioning experience and leadership Carrier offers on any job. Carrier renders a complete air conditioning service, and assumes full moral and financial responsibility for every job during and after installation. That is why so many architects and engineers have found it good business to "Let Carrier do it" not only in department and retail store air conditioning, but also in industrial, office, theater and restaurant installations.

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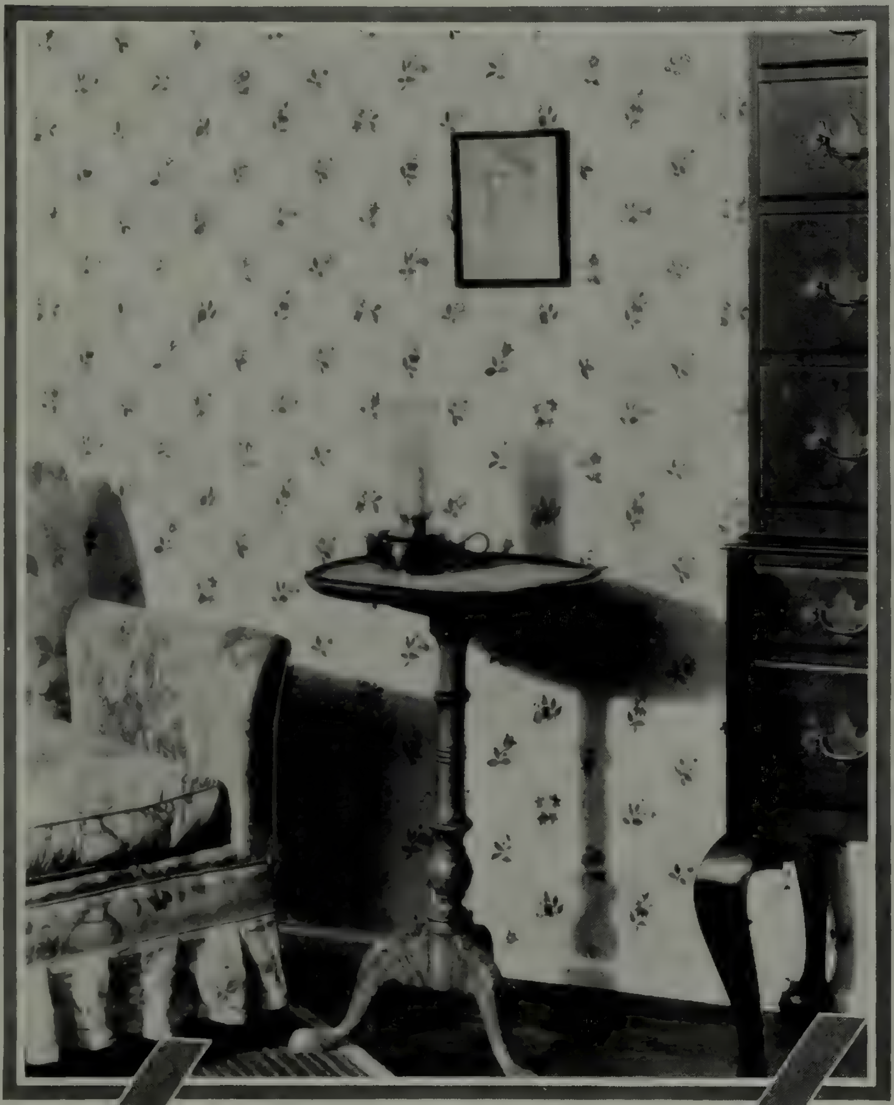

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10 Navy Pier
11 Carson, Pirie, Scott & Co.
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13 First National Bank
14 Northwestern University
15 Drake Hotel
16 Allerton House
17 Tribune Tower
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19 Hotel Sherman
20 Chicago Motor Club
21 Illinois Naval Reserve Armory
22 Standard Club
23 American Fore Bldg.

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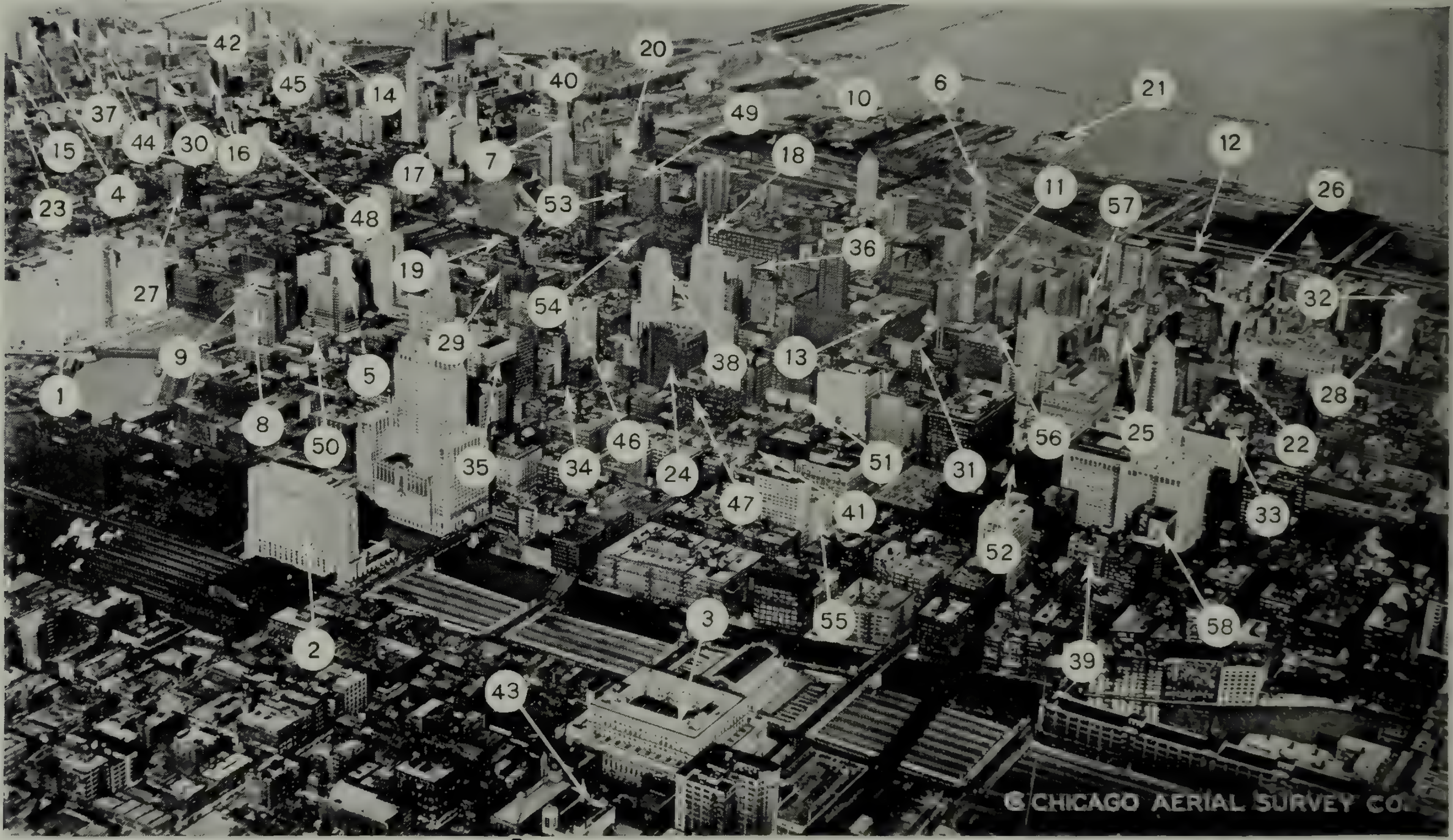

Airplane photograph of Chicago's business section.

24 Goodman Theatre
25 Adams Express Bldg.
26 Ampico Hall
27 Boyce Bldg.
28 Buckingham Bldg.
29 Burnham Bldg.
30 Central Life Insurance Co.
31 Chicago Trust Co.
32 Chicago Club
33 Chicago Engineers Club
34 Chicago Eye, Ear, Nose & Throat Hosp.
35 Chicago Mercantile Exchange
36 Chicago Title & Trust Co.
37 201 E. Delaware Apts.
38 Foreman Nat'l Bank
39 323 S. Franklin St. Bldg.
40 Furniture Exhibition Bldg.
41 Globe-Wernicke Bldg.
42 Henry Apartments
43 Horder Bldg.
44 Knickerbocker Hotel
45 Lake Shore Athletic Club
46 Lawyers Bldg.
47 Madison-Square Bldg.
48 McCormick Hotel
49 Medical & Dental Arts Bldg.
50 North Loop Motor Ramp Garage
51 Northern Trust Co.
52 Old Colony Life Ins.
53 Old Dearborn Bank Bldg.
54 Passavant Hospital
55 Shetnitz Bldg.
56 Singer Bldg.
57 A. G. Spalding
58 Wells Van Buren Bldg.

THE confidence which Chicago architects, engineers and building owners place in Jennings Pumps is evident from the large number of buildings visible in the above photograph which are Jennings-equipped.

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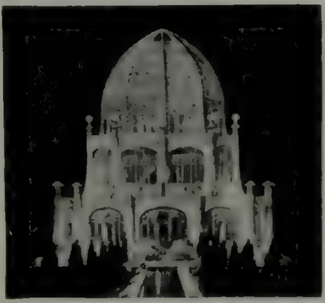

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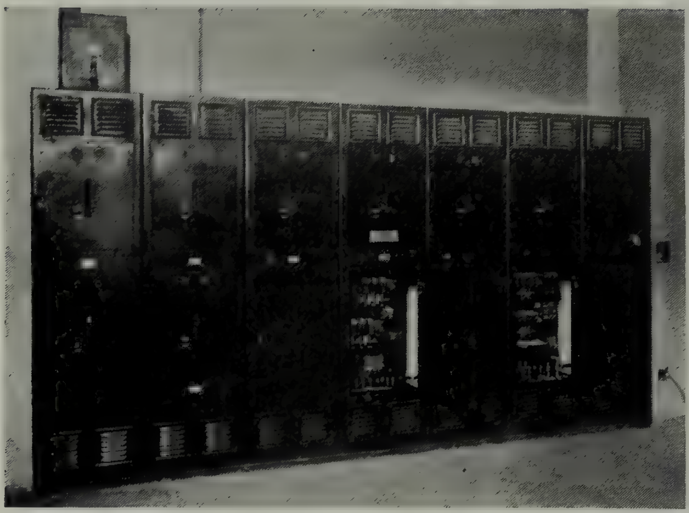
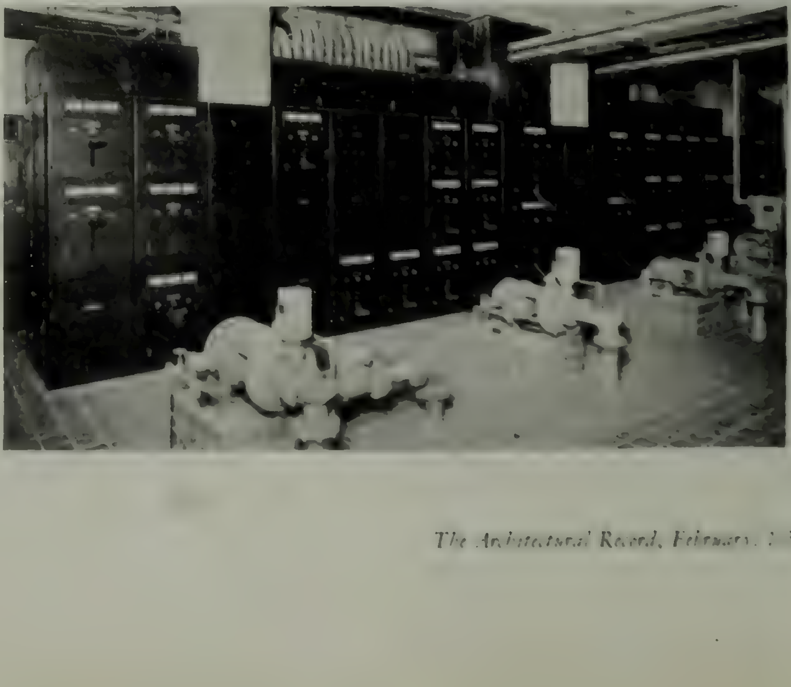
LIVE PARTS



Boiler room equipment Control Panel. One of 10 boards erected in this building to control pumps, blowers, ventilating equipment, etc.

209 West Seventh Street Building of Cincinnati and Suburban Bell Telephone Company. Architect—Harry Hake, Cincinnati, Ohio. Electrical Contractor—Standish Electric Company, Cincinnati, Ohio. General Contractor—J. and F. Harig Company, Cincinnati, Ohio.



Main power and lighting distribution switchboard consists of 17 steel panels 24 inches wide and 2 steel panels 48 inches wide.

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by a Shield of Steel

IN the 209 West Seventh Street Building of the Cincinnati and Suburban Bell Telephone Company all live parts of the main power and lighting, control and auxiliary panels are covered by a shield of steel . . . a feature of Westinghouse air-breaker-equipped, dead-front switchboards.

Only the insulated operating handles of the CL breakers and the trip buttons project from the front of the board. The breakers are flush-mounted and are accessible through an opening in the front of the panel. This opening is covered by a removable steel plate held in place by four screws. Inspections and adjustments to the breaker can be made without interrupting the service.

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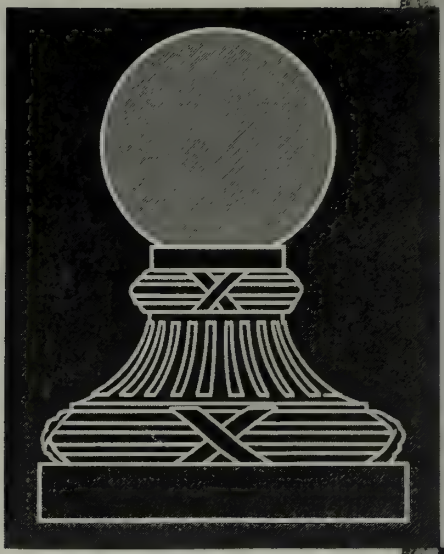
Design No. 1668

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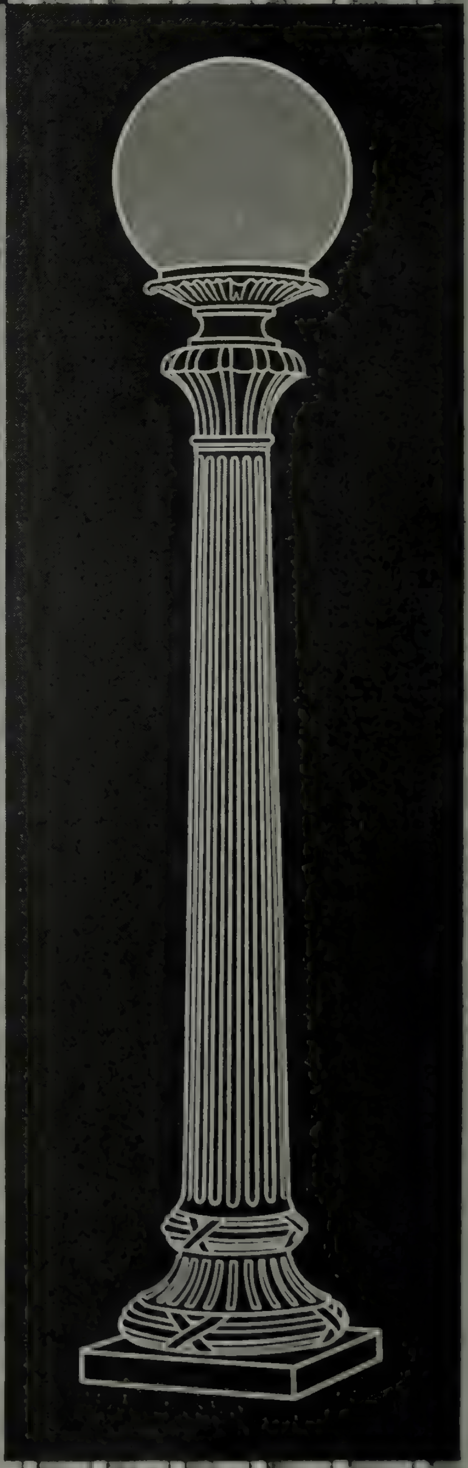
LIGHTING FIXTURES


Design
No. 739

Northwestern National Bank, Graham, Anderson, Probst & White, Architects.

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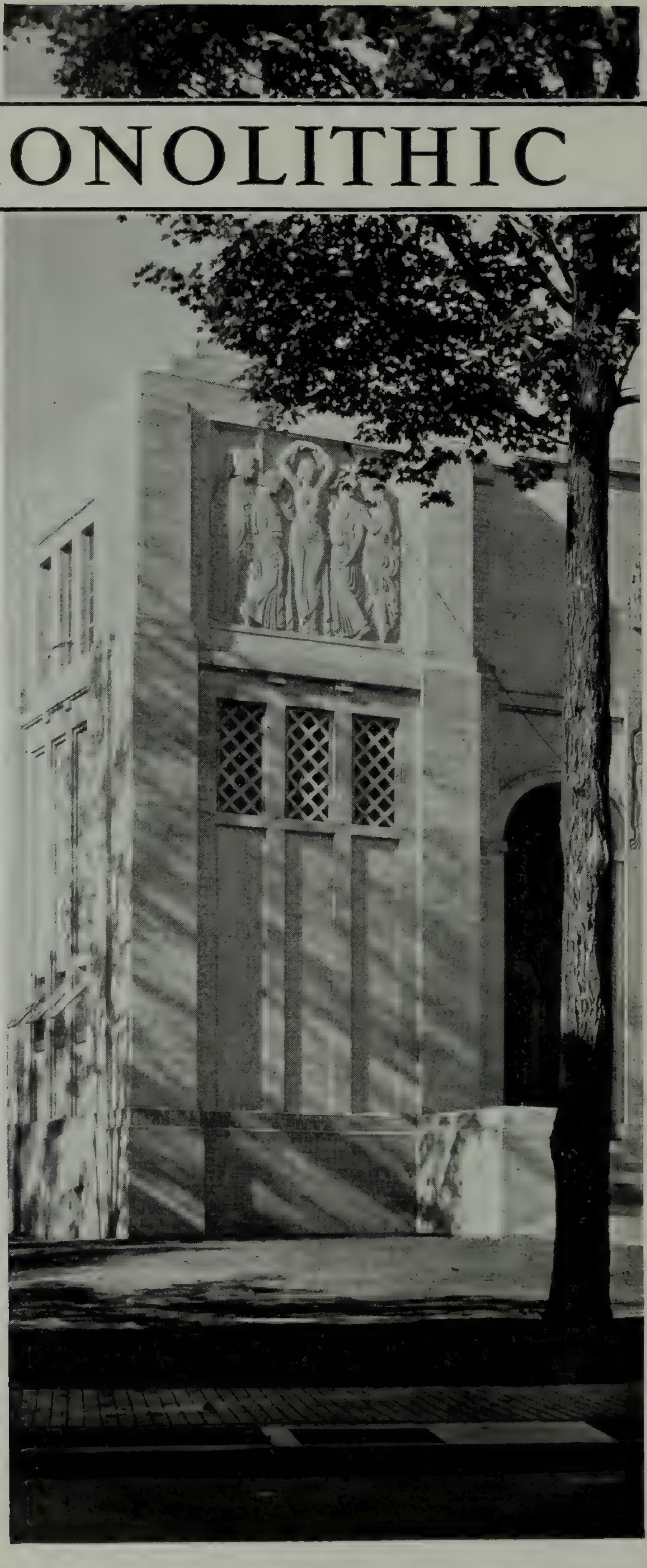

Corner Pylon
Norton Memorial Hall
Chautauqua, New York

•

Otis F. Johnson, *Architect*
Lord & Hollinger, *Structural Engineers*
Fred M. Torry, *Sculptor*
Lorado Taft, *Consultant on Aesthetics*
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Rust Engineering Company, *Builders*
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Norton Memorial Hall is an auditorium seating 1,500 people. The building is approximately 83 by 143 feet, with walls 40 feet high. The entire building is of reinforced concrete, the exterior left just as it came from forms and molds except for cleaning with brush and water.

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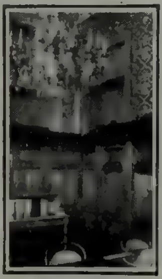
SOUTH AMERICA
The roof of this Buenos Aires building is insulated with Insulite.

AT THE SOUTH POLE
Insulite insulation was used in the huts of the Byrd Expedition.

ENGLAND
Insulite corrected the acoustics in this Newcastle-on-Tyne Theatre.



FRANCE
Old Luxembourg Palace, Paris, has Insulite lined Telephone booths.

SWEDEN
The Sport Palace, Stockholm, insulated throughout with Insulite.

GERMANY
Stuttgart Newspaper uses Insulite for insulation and sound deadening.

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New Hook-Up for radio installations —modern, unique in idea. Aerial, Ground and Power connections from a ONE-Gang Outlet. Fits all standard-depth wall boxes; takes standard Bakelite Duplex Receptacle Plates. All Bakelite; face, body and back. » » » » »

Aerial, ground and power connections are plainly marked on Receptacle. To further insure correct connections, the aerial and ground plug has blades set at angle which prevents insertion in the power slots of Receptacle. In use it is positively fool-proof. » »

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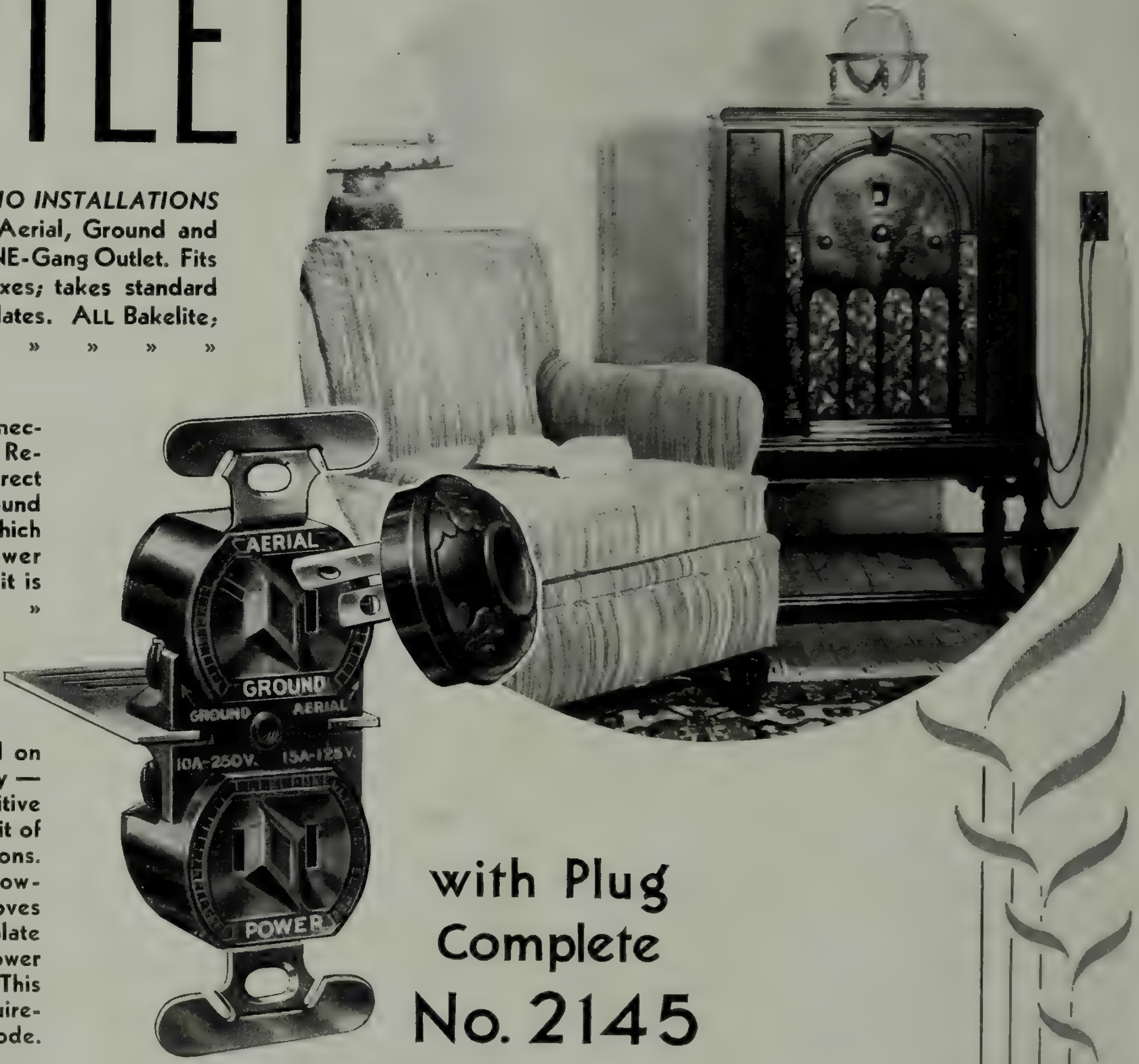

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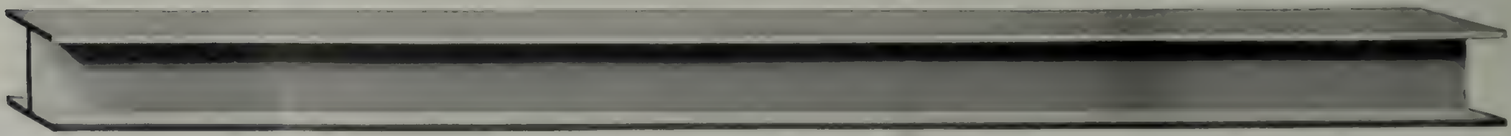

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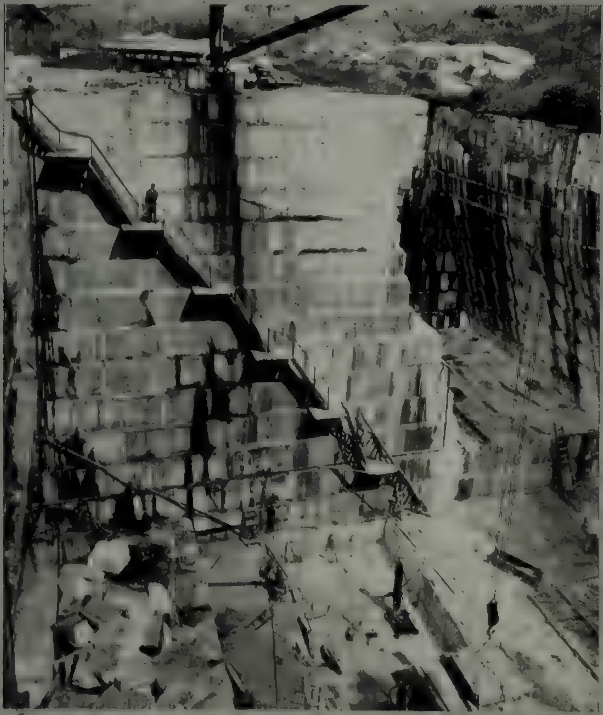

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We have three finishing plants and nine quarries in operation the year round—there is no *closed season.*

The illustrations show three of our quarries and an air view of our Tate finishing plant. The other two plants are at Nelson, Ga., and Marietta, Ga.

Although the nine quarries now in operation are meeting our needs, new quarries can be opened when necessary. At almost any point over an area of 7000 acres it is possible to open up a new quarry by removing the surface soil.

Test borings indicate that this section contains Georgia Marble in quantities so great that it would take many centuries to quarry even the marble that has been definitely charted.

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National consumer advertising is telling the story of Zenitherm to your clients, recommending that they go to *you* for information on Zenitherm.

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Another palatial New York hotel, the magnificent Hotel Pierre at Fifth Avenue and 61st Street, is added to the imposing list of notable structures in whose construction C B sections (Carnegie Beams) have been used. If you are interested in efficient and economical steel construction, investigate the merits of these modern sections.

Our engineers are at your service.

116

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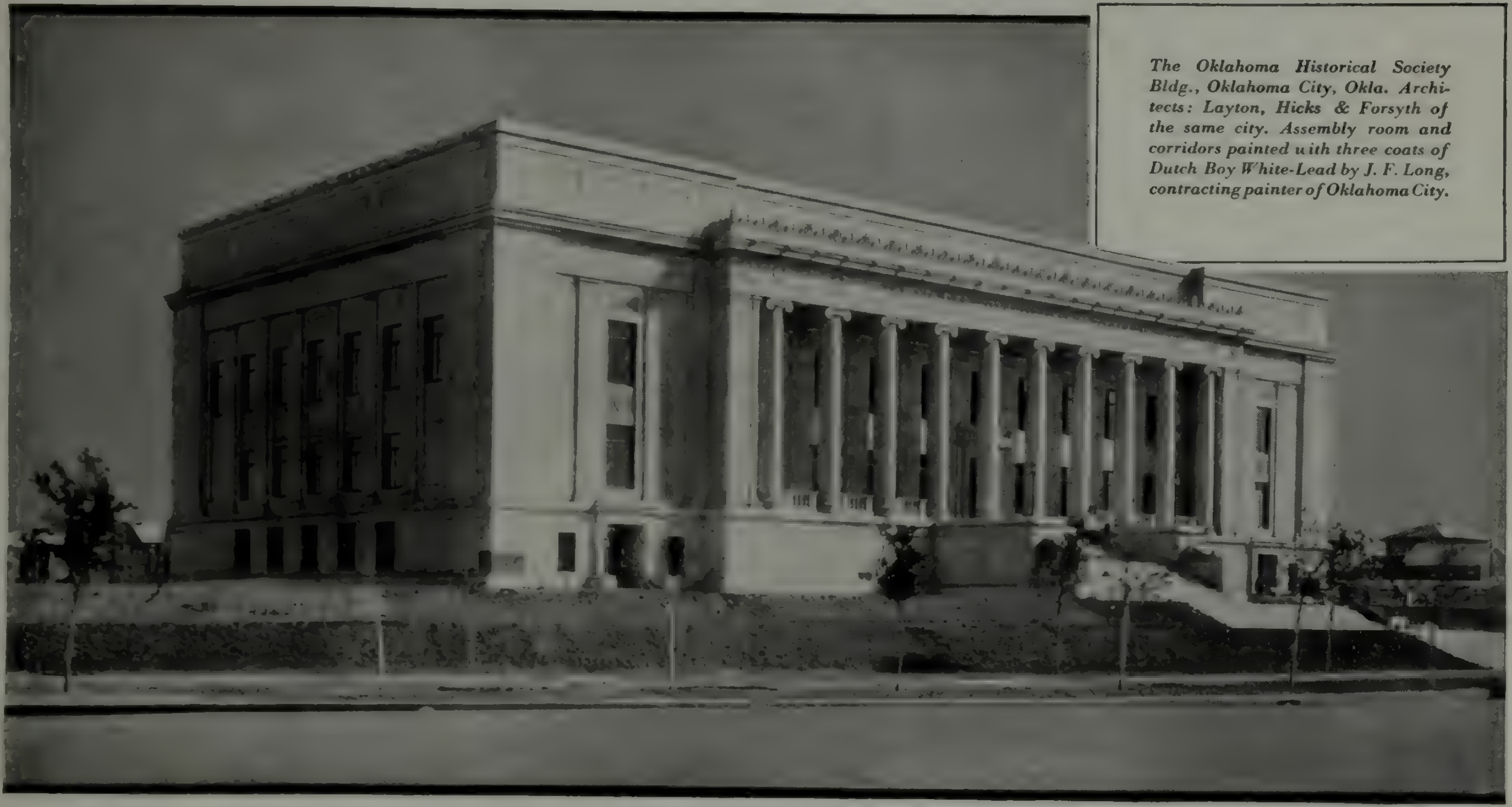
The Home of Oklahoma's Historical Society



The Oklahoma Historical Society Bldg., Oklahoma City, Okla. Architects: Layton, Hicks & Forsyth of the same city. Assembly room and corridors painted with three coats of Dutch Boy White-Lead by J. F. Long, contracting painter of Oklahoma City.

. . . *again demonstrating* DUTCH BOY'S *advantages*

ADD to the list of important buildings throughout the country on which Dutch Boy White-Lead is used, this stately, new $500.000 home of the Oklahoma Historical Society.

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New York, 111 Broadway; Buffalo, 116 Oak Street; Chicago, 900 W. 18th Street; Cincinnati, 659 Freeman Avenue; Cleveland, 820 W. Superior Avenue; St. Louis, 722 Chestnut Street; San Francisco, 2240 24th Street; Boston, National-Boston Lead Co., 800 Albany Street; Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Avenue; Philadelphia, John T. Lewis & Bros. Co., Widener Building.

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The Riverside Church, New York City. Henry C. Pelton and Allen & Collens, Associated Architects.

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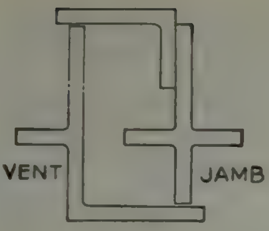

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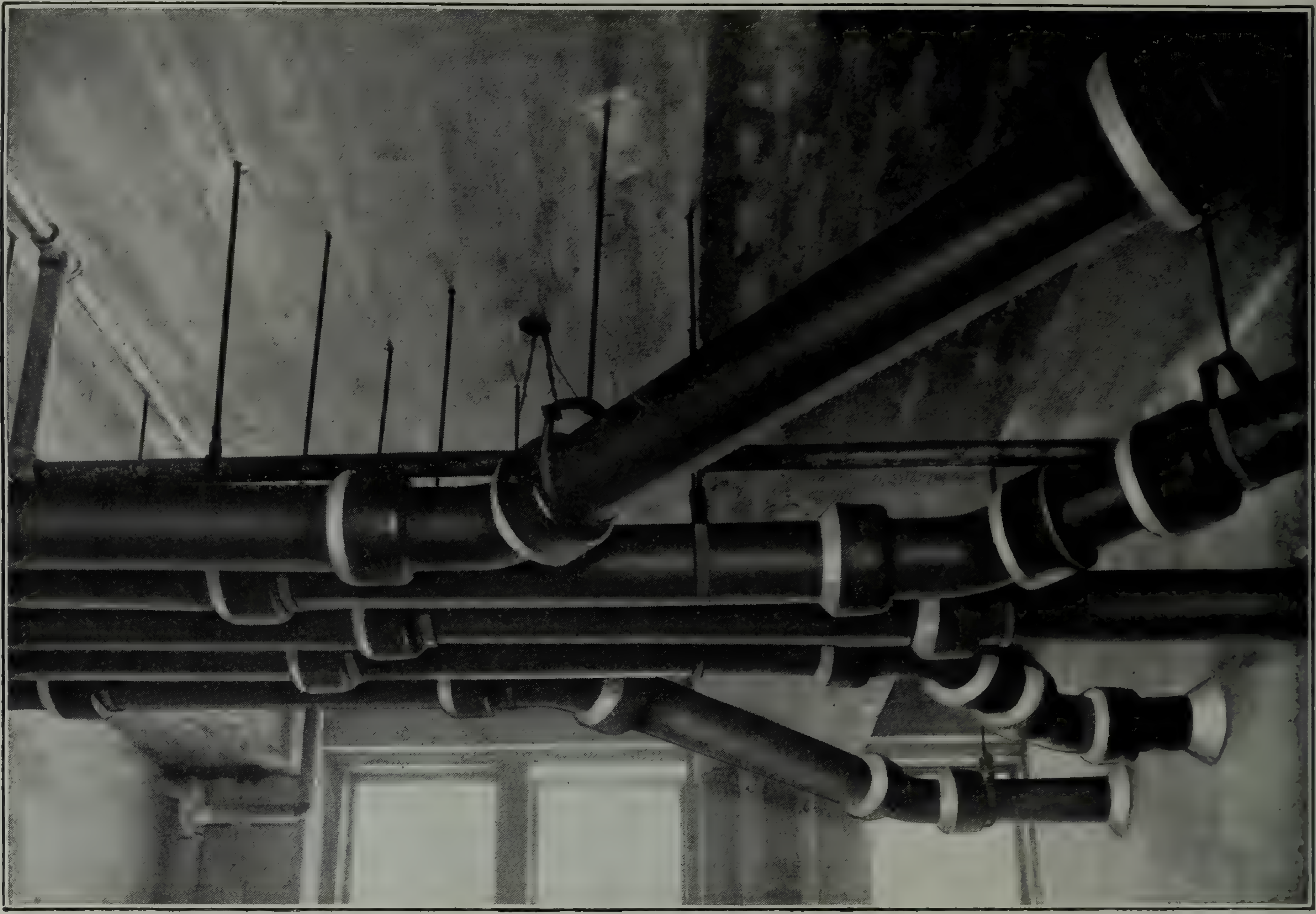

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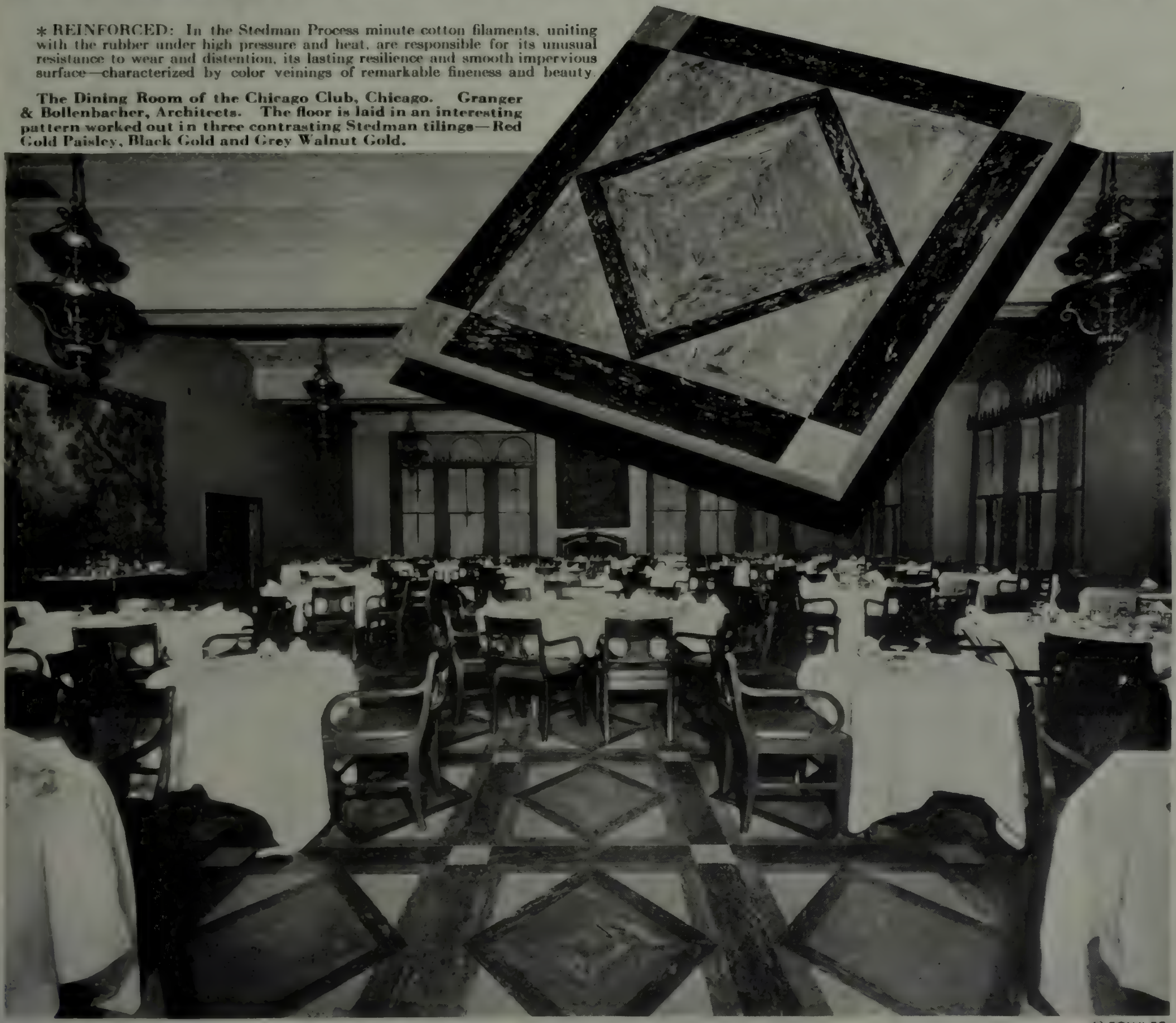

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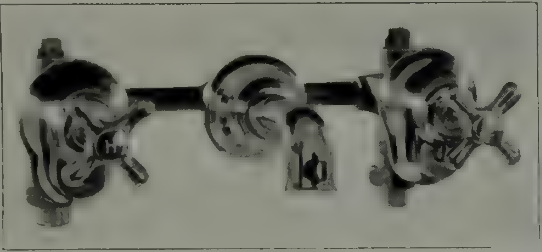
Bathroom Fixtures fall in line with Fashion's Footsteps!



H-3965
sizes ½″ and ¾″

H-3965 Mueller Over-the-rim Tub Filler with cast metal spout and spout escutcheon. Supply valves with screw driver slotted integral stops; four-arm handles with interchangeable metal caps indexed "H" and "C"; ground joint unions and renewable seats.

Finish: Chromium plate only.

IN days gone by the bathroom was done in an obscure manner with little or no care to the appearance of its appointments. Now all is changed. The bathroom of today is fitted with fixtures as beautifully designed and made as fine silverware—and in the strict dictates of Fashion!

Mueller Bathroom Fixtures for 1931 express Fashion's whims to the utmost. In every case you will find deft appealing designs that catch the admiration of smartest women as well as luxury-loving men. But—not only are Mueller Fixtures fashionable in appearance; they are also built with the precision of master craftsmen of finest materials from factory controlled sources.

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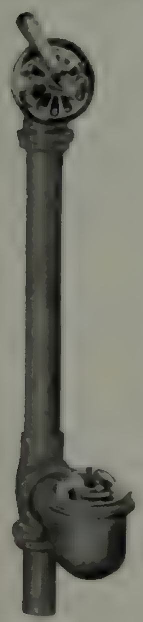


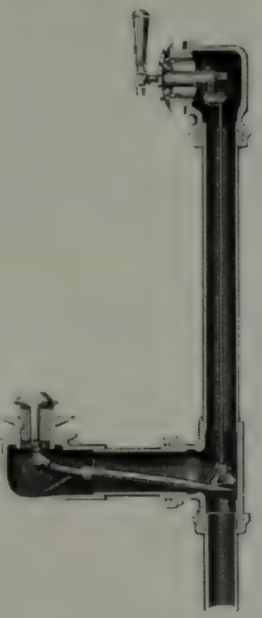
H-5865 Mueller Pop-Up Bath Drain. Size 1½″. 17 gauge only. Tee outlet provides for 1½″ slip joint connection, 1½″ wiped joint connection, or 1½″ I. P. connection.

Finishes: Rough brass with parts inside tub nickel plated.

Rough brass with parts inside tub chromium plated.

All working parts removable from inside of the tub. The seal is within the tub. No pockets of dirty water to foul the tub when refilled. Cannot be used for back wall installation.

The Mueller Pop-Up Bath Drain positively removes that bugbear of all plumbing installations—the necessity of a panel behind the tub.



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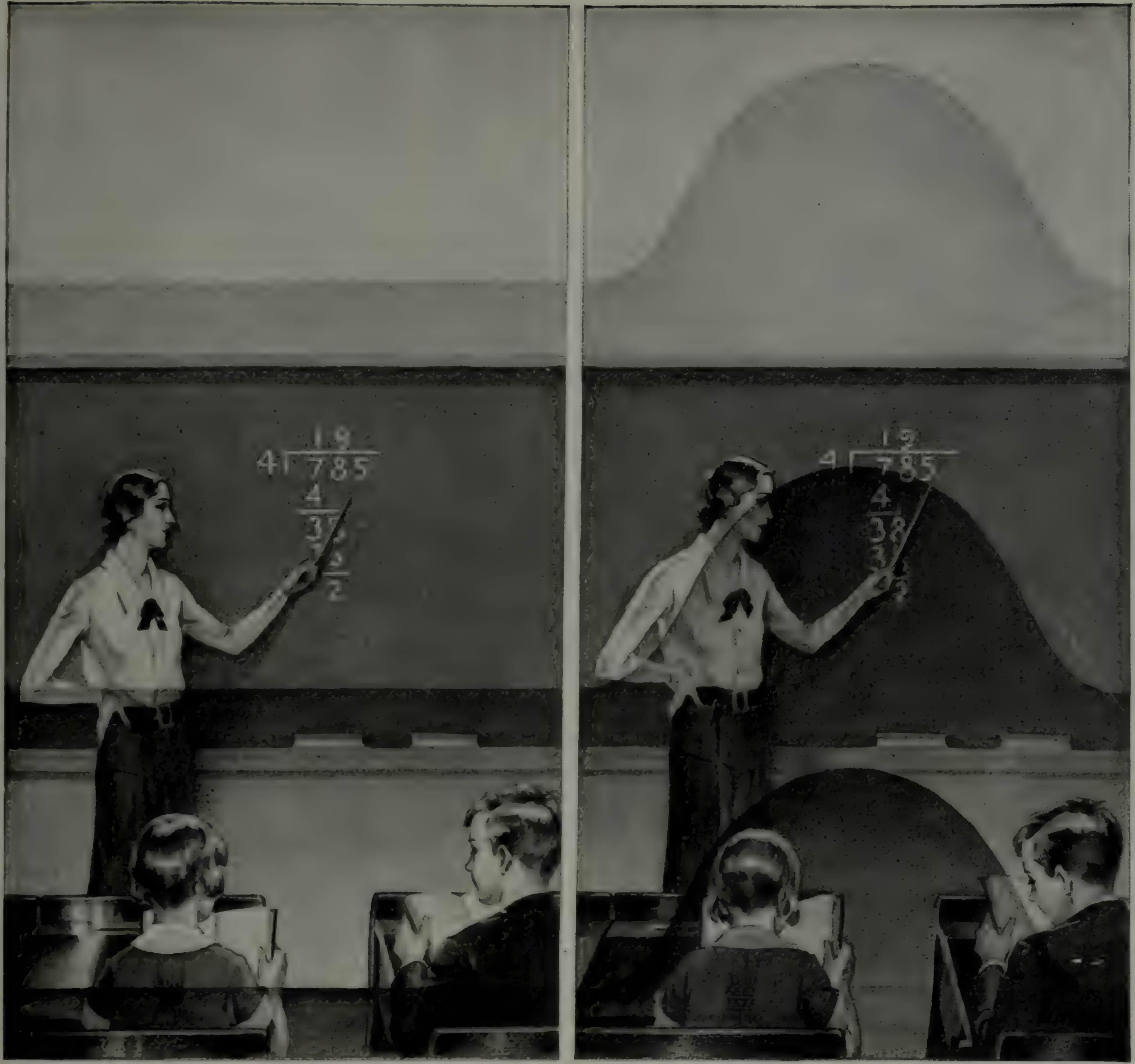

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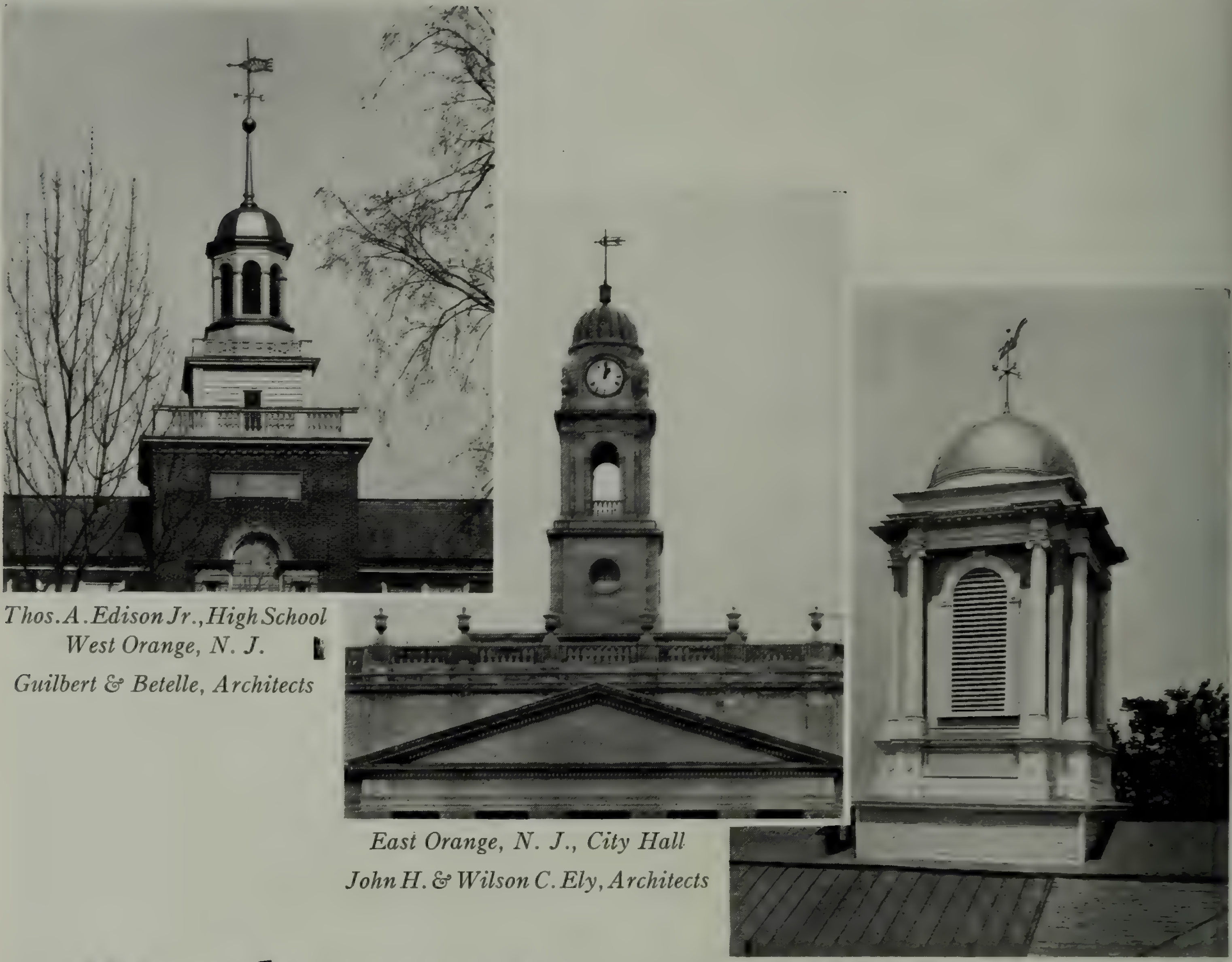

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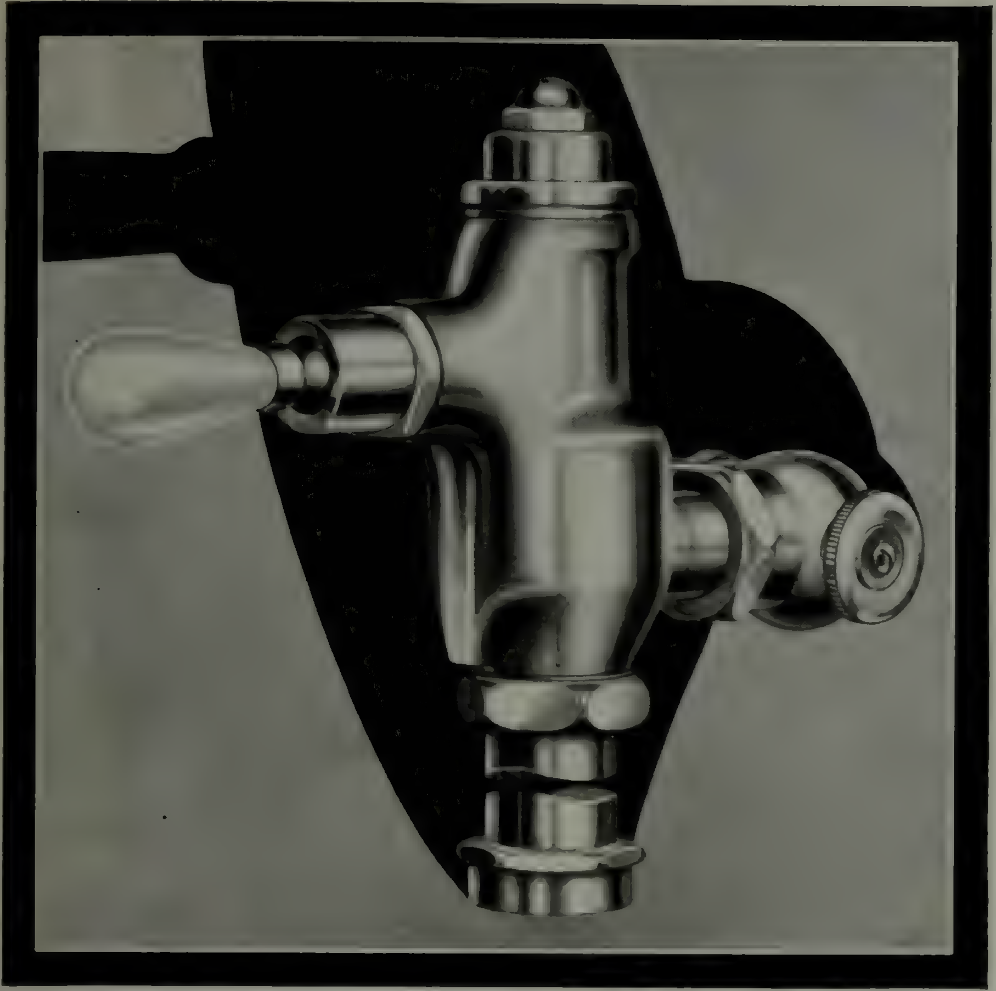

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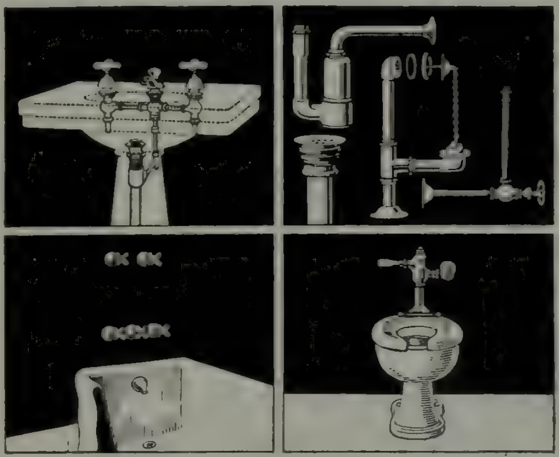

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3. *Architects Building.*
   Architect: Boyd, Able & Gugert.
   Electrical Contractor: W. V. Pangborne & Co.
4. *University Club.*
   Architect: Grant M. Simon, Philadelphia.
   Electrical Contractor: W. V. Pangborne & Co., Phila.
5. *Market Street National Bank Building.*
   Architect: Ritter & Shay, Phila.
   Electrical Engineer: I. H. Francis, Philadelphia.
   Electrical Contractor: Enterprise Electric Co., Phila.
6. *Free Library.*
   Architect: Horace Trumbauer, Philadelphia.
   Electrical Contractor: W. V. Pangborne & Co., Phila.
7. *Provident Life Building.*
   Architect: Cram & Ferguson, Boston.
   Electrical Contractor: W. V. Pangborne & Co., Phila.

EVEN he, possessed of remarkable foresight, would be amazed. The growth of the city . . . the monumental buildings . . . the transportation facilities and countless other developments would seem to him almost unbelievable. *As a pioneer in the electrical industry*, he would be especially interested in its development, and we can imagine the keen delight with which he would inspect the electrical installations in some of the notable recently constructed buildings illustrated above, the pleasure with which he would throw a Bryant switch and see a room instantly flooded with light from Bryant sockets or receptacles. We, of the present day, take these conveniences as a matter of course, just as those architects and engineers, who are discriminating, specify "Bryant Superior Wiring Devices"—*as a matter of course.* But let us not forget the many things we owe one of the most remarkable men of all times.

See our catalogue, filed in the new 4-volume Sweet's for 1931, Vol. D, pages 5867 to 5873 and page 6068.

A-231

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ARCHITECTS' ANNOUNCEMENTS

CALENDAR OF EVENTS

February	Exhibition of etchings by William H. Wallace and lithographs by Vernon Howe Bailey in the Print Room (Room 316) of the New York Public Library.
Feb. 1-28	Annual exhibition of the Architectural League of Greater Miami, Florida.
Feb. 1-28	Exhibition of Persian Art, London (Burlington House).
Feb. 1-March 12	Art Exhibition, Royal Society of Painters, Etchers and Engravers, London (5a, Pall Mall East).
Feb. 21	Closing date for applications for scholarships for special students, School of Architecture, Harvard University. Apply to Dean G. H. Edgell, Robinson Hall, Cambridge, Mass.
March 14	Programs for the A. W. Brown Traveling Scholarship will be issued, calling for delivery of drawings on April 13. Apply to William Dewey Foster, 25 West 45th Street, New York City.
March 16-18	Seventh annual meeting of the Concrete Reinforcing Steel Institute at Biloxi, Miss.
March 28-May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 3	Architectural students wishing to enter a competition for "the design of the most beautiful highway bridge in steel" are invited to submit to the American Institute of Steel Construction, 200 Madison Avenue, New York City, their preliminary sketches to be placed in judgment on this date.
April 7-May 2	Exhibition of Ideal Homes, London (Olympia).
April 14-16	Convention of American Institute of Architects, San Antonio, Texas.
April 18	Closing date for applications for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
May	Exhibition of British Contemporary Art, London (Imperial Institute).
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
July 10 Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in co-operation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company, Cleveland, Ohio.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).

ANNOUNCEMENTS

Nimmons, Carr and Wright, architects, 333 North Michigan Avenue, Chicago, announce that Daniel Edwards Sawyer will be associated with them in the administration of their work.

Hermann Schoenfeldt, designer and craftsman, has opened a studio for interior architecture and industrial design at 180 North Michigan Avenue, Chicago, and would appreciate receiving manufacturers' catalogs.

Louis H. Gerding announces the opening of a new office at 708 La Salle Street, Ottawa, Illinois.

John Henri Deeken and Hubert Marion Garriott announce their association in the practice of architecture.

LECTURES BY HENRY S. CHURCHILL

Continuing through February on Thursday evenings will be the series of lectures by Henry S. Churchill, architect, at the New School of Social Research, New York City. The lectures will concern tendencies of modern architecture in America, stressing the new requirements and economic factors, materials and methods.

SMALL HOUSE EXHIBIT

The House Beautiful magazine announces the following itinerary for its traveling exhibit of photographs and plans of recently built or remodeled houses selected from its annual Small-House Competition: February 9–21, Indianapolis, John Herron Art Institute; February 26 – March 9, Pittsburgh, Pittsburgh Architectural Club; March 12 – 26, Cleveland, Builders' Exchange Building; March 30 – April 11, Chicago, Builders' Exchange, 228 North La Salle Street; April 18–25, New York City, Architectural and Allied Arts Exposition, Grand Central Palace; May 4–16, Detroit, Architects Exhibit Corporation, Barlum Tower.

THE PRINCETON PRIZES IN ARCHITECTURE

Two competitive prizes of $800 each, in the School of Architecture, Princeton University, are announced for the year of 1931–1932. The prizes will be awarded as the result of a competition in design to be held from 9:00 a. m. May 22, to 9:00 a. m. June 1. The winners will devote the following school year to the study of advanced architectural design, and such other subjects as they may elect. They are exempt from tuition fees.

Applications to enter the competition for the prizes must be filed on or before April 18, 1931. For application blanks and regulations governing the competition and award, address The Director, The School of Architecture, Princeton University, Princeton, N. J.

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THE MARCH ISSUE: APARTMENT HOUSES

The Apartment House to be successful must be rentable. It must have efficiency in planning, attractiveness in appearance, recreation facilities and labor saving conveniences that are compensations for living in the multi-family dwelling. A study has been made of these practical elements with a view to aiding the architect to plan effectively the new type apartment.

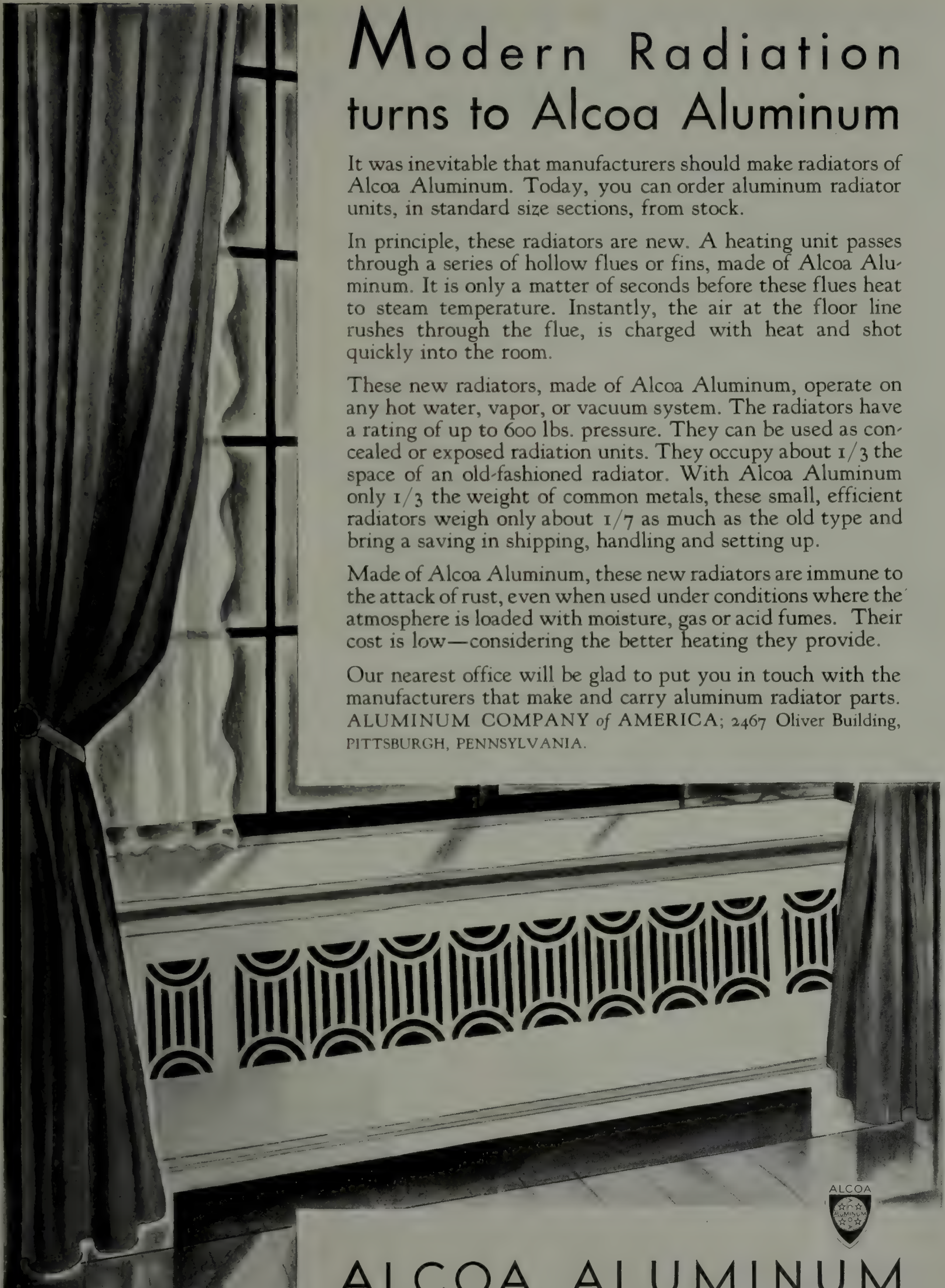
Henry Wright, lecturer at Cornell University and the University of Illinois on apartment planning, and associated architect with Clarence Stein on the Sunnyside and Phipps Apartment developments, will discuss the changing trends in apartment design. He will also indicate ways in which architects may associate themselves with apartment and other housing undertakings.

An extremely useful feature of the issue will be the collection of successful plans for the 1, 2, 3, 5 and 8 room apartment with critical discussion by Henry Wright, Arthur Holden and R. L. Davison. The comment will evaluate arrangement advantages, room sizes, desirability of duplex living rooms, kitchenettes, dining rooms and dinettes, and features that make for rentability and economy.

Recreation facilities for the apartment will be considered in detail, including playgrounds for children, space requirements for tennis courts, games, sand plots, recreation for adults, porches and roof terraces. With the information given the architect will be able to determine the amount of recreation space that is needed for apartments of various sizes.

Closets and storage space necessary to apartments will be analyzed from the angle of accommodation needs. What constitutes a compact closet? What is the value of cedar in the clothes closet? How should furs be stored? What are efficient doors for closets, medicine cabinets and kitchen cupboards? Every angle of closet planning and arrangement will be subjected to thoughtful consideration with illustrations and drawings of desirable solutions.

We believe that this issue of The Record will prove a distinct assistance to the architect in planning the small or large building for living accommodations. The illustrations will cover the entire country with emphasis on elements that have practical value to the architect.



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Our nearest office will be glad to put you in touch with the manufacturers that make and carry aluminum radiator parts. ALUMINUM COMPANY *of* AMERICA; 2467 Oliver Building, PITTSBURGH, PENNSYLVANIA.

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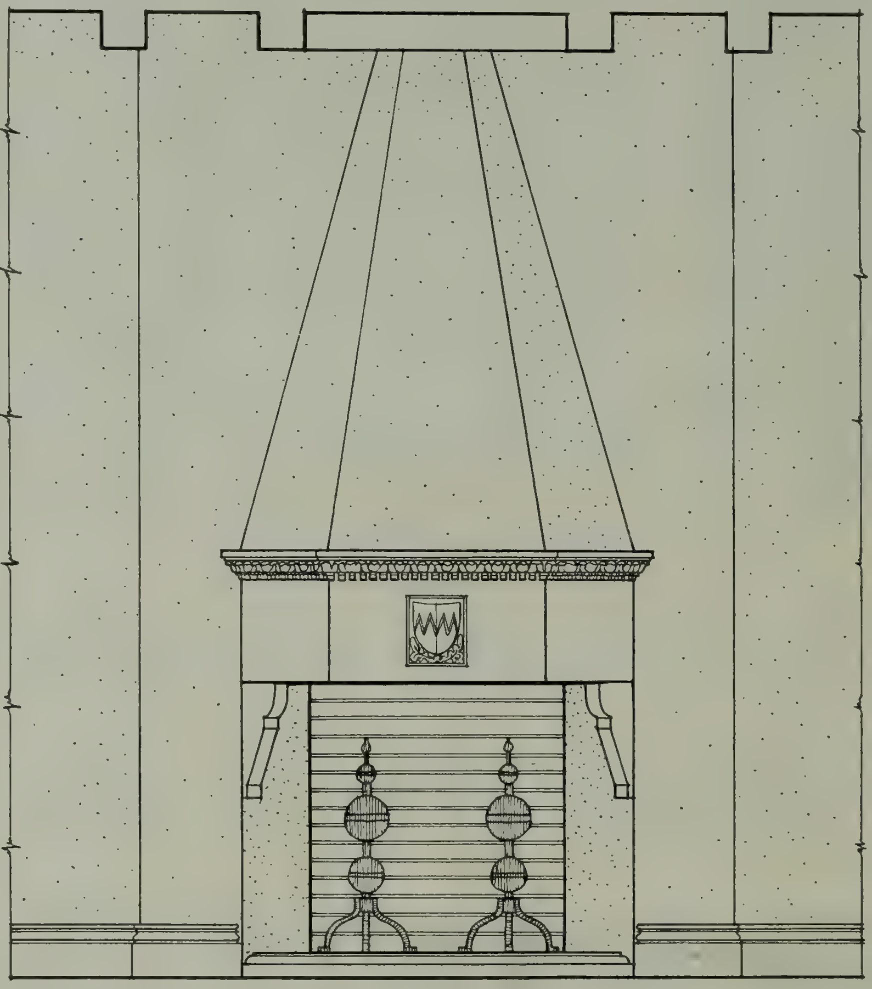
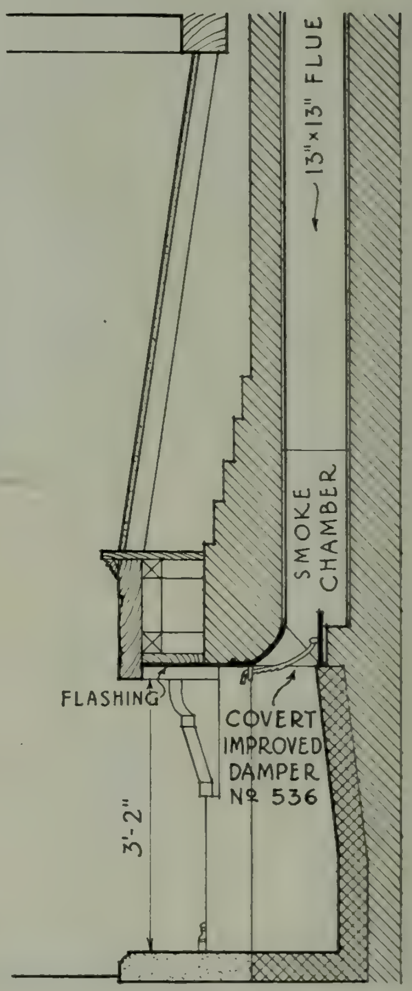


ELEVATION



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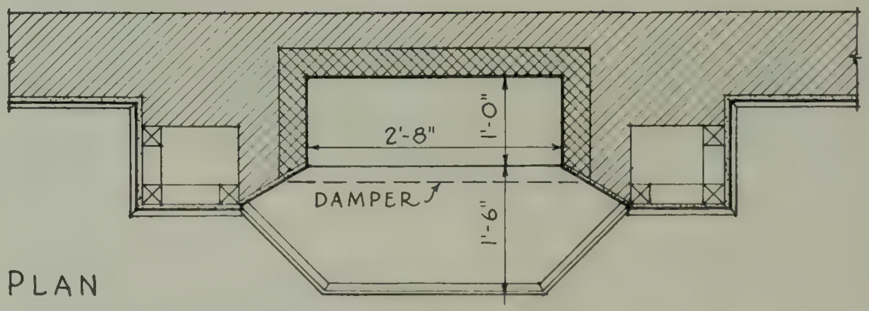

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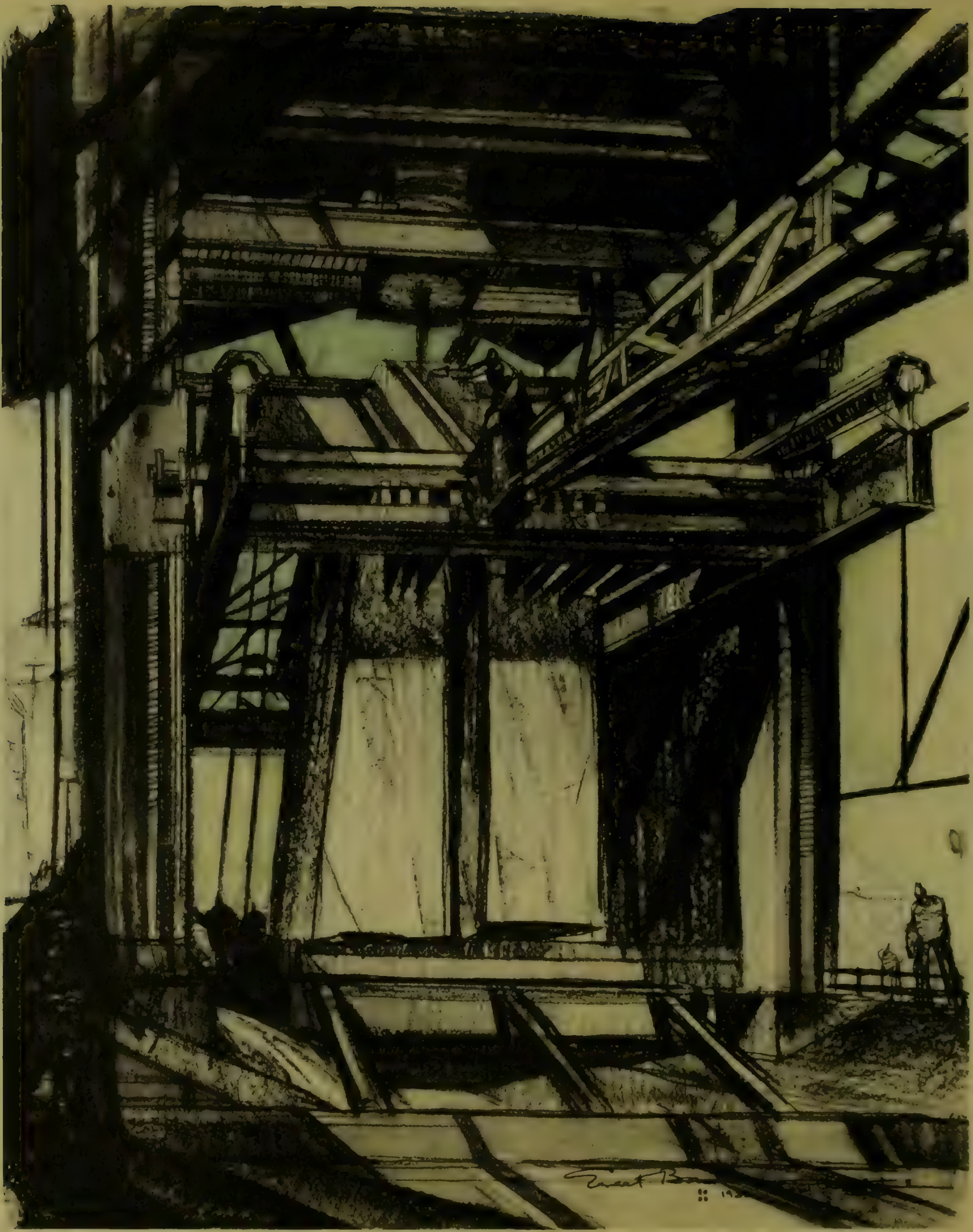

GANG SAWS

Number Five of a series of twelve drawings made at the Fletcher Quarries by Ernest Born.

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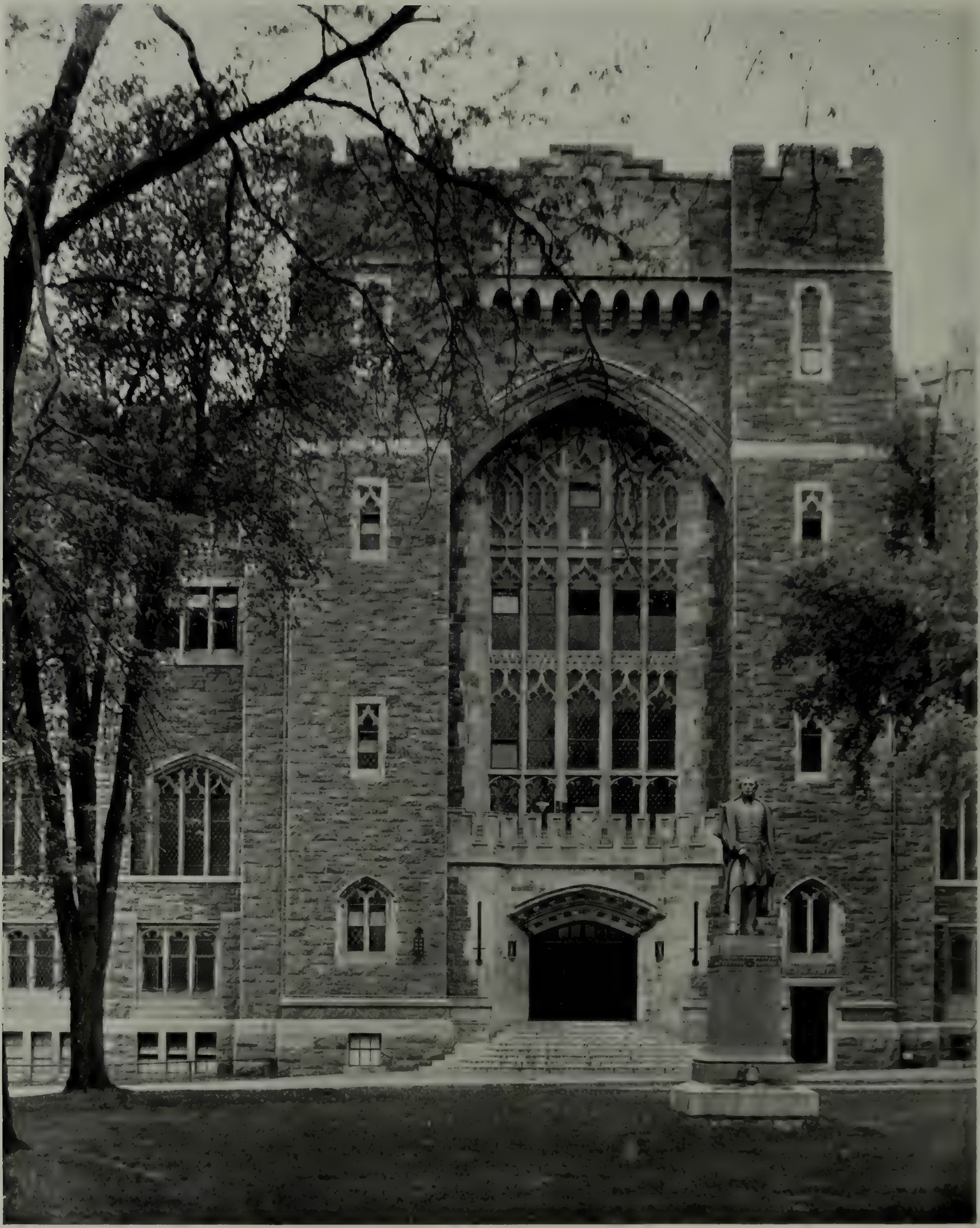

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WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

THE ARCHITECTURAL RECORD

AN ILLUSTRATED
MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 NUMBER 2 FEBRUARY, 1931

THE NEW MESS HALL AT WEST POINT

GEHRON AND ROSS, ARCHITECTS

By Parker Morse Hooper

The problem of designing a single mess hall sufficiently large to feed the entire corps of cadets at one sitting was complicated considerably by the peculiar shape of the plot of ground available for the carrying out of this project. As the site is a lot at the corner of two avenues on the south side of the parade ground it was necessary to design the building in the shape of the letter "V".

THE PROBLEM

It was necessary to design a building containing a dining room of sufficient size to seat 1,600 cadets at one time and allow for a future increase of at least 400 cadets. Also the building had to be so designed and constructed as to provide space on two upper floors for what is known as the drawing academy or department of mechanical drawing, and for dormitory quarters for employees of the building.

CONSTRUCTION AND COST

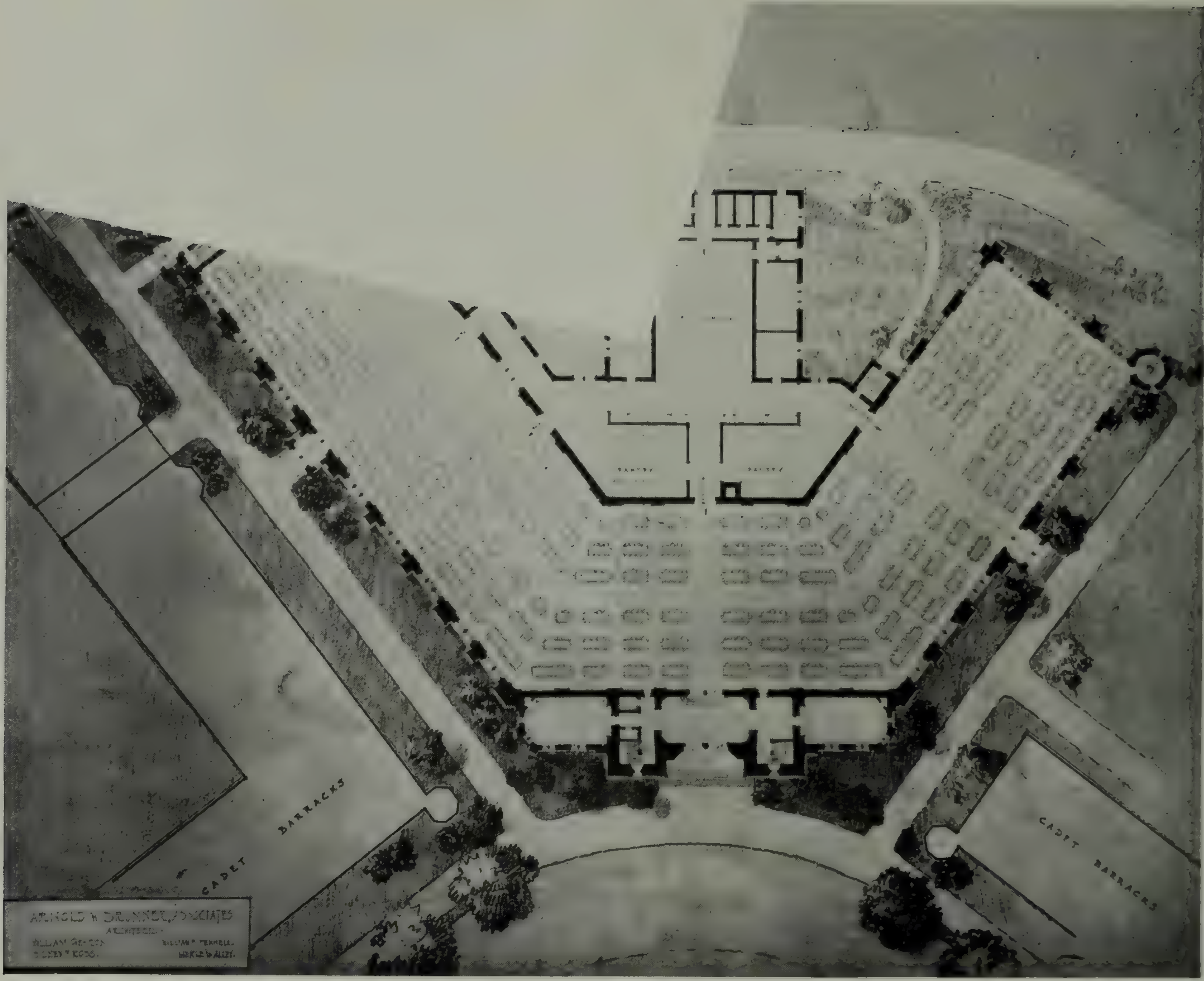
The West Point Military Post built the new mess hall by the method of purchase and hire. To Col. E. J. Timberlake, Q.M.C., constructing quartermaster, and William Goding, superintendent of construction, belong the credit for the successful carrying out of this great project. The building, fireproof throughout, has a steel skeleton frame, non-bearing masonry walls and reinforced concrete floors. The roof, supported on steel rafters, is covered with slate. The building which has five stories and a basement, occupies approximately 51,000 square feet and cost the United States Government approximately $3,000,000. The exterior walls are built of rock-faced variegated gneiss, quarried and dressed on the military reservation, and are trimmed with Indiana limestone.

DESIGN

The design of this new cadet mess hall, officially designated as Washington Hall and the largest single building at West Point, is similar in style to the other recently erected buildings. When Cram, Goodhue and Ferguson made their designs for the new West Point twenty-five years ago, they took as the inspiration for the architecture of the new buildings a simplification of the English collegiate Gothic style. In the design of this new hall, Gehron and Ross, the architects, have adapted in a pleasing and successful manner the architectural style so splendidly exemplified in the cadet chapel and the great riding hall.

ARRANGEMENT

The main feature of the building is the cadet dining hall which occupies the entire



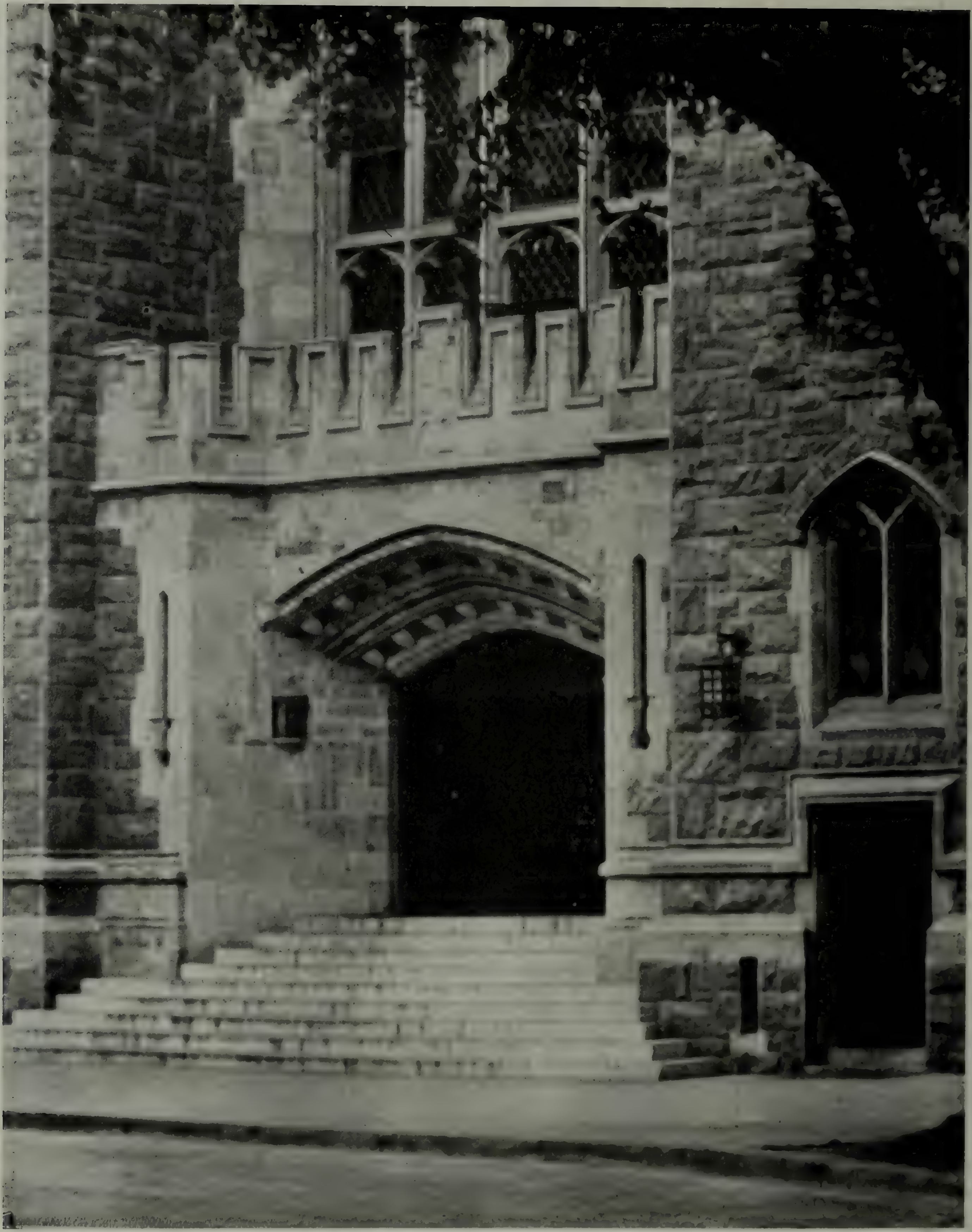
WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

Ground floor plan.

first floor and is entered through three large doors, located in the center and on each side. The center or main entrance opens first into a monumental vestibule with walls and fan vaulting in limestone. The massive doors are of oak with panels and moldings in Gothic design. On either side of this entrance vestibule are monumental stairways with terrazzo treads and walls in gray face-brick with limestone window coigns. At one side of these stairways is an oak-paneled visitors' room, and on the opposite side two rooms used as the office of the mess officer of the post. The great dining hall follows in plan the "V" shape of the building. Each leg of the "V" is 70 feet in width and the entire length of this room is approximately 500 feet. Above a high oak wainscot which extends to the sills of the large Gothic windows the rough plaster walls rise to a height of 36 feet. The slightly splayed ceiling is decorated with large and small beams supported on massive stone corbels. The architects originally intended to decorate the ceiling in colored fresco but lack of funds prevented the execution of this work. The floor is of gray-green slate laid random ashlar. Directly back of the mess hall and located in the center of the "V" plan is the great kitchen, square in shape with a high clerestory for light and ventilation. Two long coal ranges occupy the center of this room, containing eighteen fires, nine in each row. Along the walls are steam kettles and roasters, in front of which are eight serving tables with racks above. From the "V"-shaped mess hall there are three entrances into the kitchen. At each entrance on the kitchen side there is a coffee urn, a sink and two toasters. Grouped around the main kitchen are various rooms necessary to the successful operation of so large a culinary plant. These rooms consist of two small dining rooms for the help, a scullery with two large sinks, a general utility room with sinks, a dry grocery storeroom, a room for storing and distributing bread which is connected by a dumbwaiter with the bakery in the basement directly below it, cold rooms for the temporary storage of meat, vegetables and dairy products for each day's use, a room for preparing vegetables, and two large dishwashing rooms lighted and ventilated artificially, equipped with electric dishwashing machines, each having a battery of sinks. Also between the dining room and kitchen are located the lockers or individual cupboards for china and tableware. Each waiter is required to look after and be responsible for the china and utensils used on his own table. This arrangement saves much breakage and loss in the china and silverware. In all rooms in the kitchen department on both the main floor and the basement the walls are faced with cream-white glazed terra cotta blocks 7″ x 12″ x 4″, and all of the floors are covered with 6″ x 6″ red quarry tile, supplied with occasional floor drains.

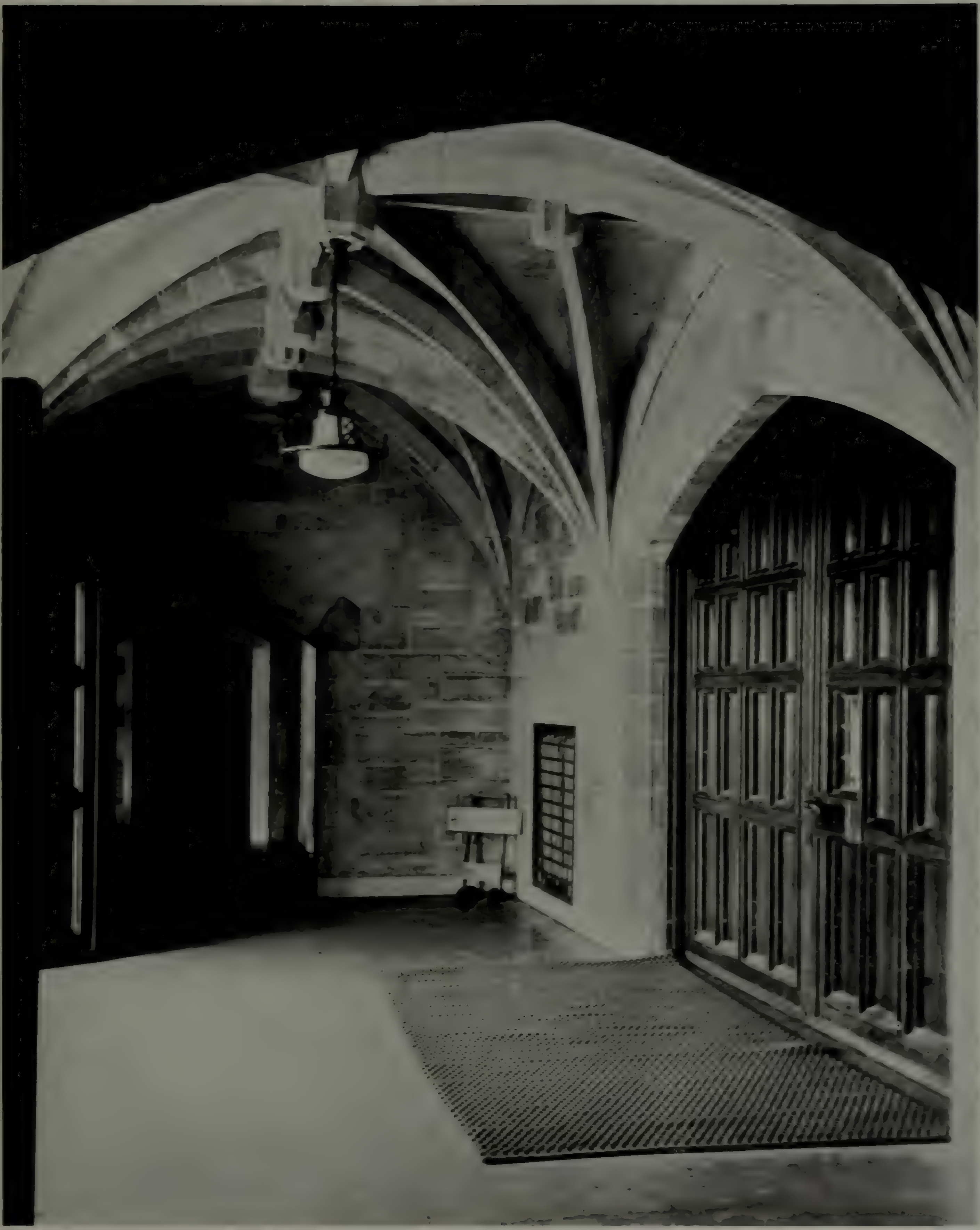
Although designed principally to house the mess hall and culinary department, this building also contains the cadet store with its salesroom, tailor shop, cobbler shop and other activities, at the extreme left end of the building. On the fourth floor, which is directly above the dining room, are storage and filing rooms with a small kitchen, rest room and dining room for both men and women employees of this department. Space is also provided on this floor for dormitories for the use of visiting athletic teams as well as the male employees of the mess hall. Connected with the ten small dormitories are toilets and showers, storerooms and a central living room. On the fifth floor the tailoring department occupies the extreme left end, which is entirely shut off by a fireproof partition from the two large drafting rooms. At the center of this floor is a large lecture hall in which the seats are arranged in radial banks similar to those in operating theatres. Back of the central desk is a blackboard and rolling picture screen. Adjacent to this lecture hall are rooms containing complete facilities for photographic work, a library, conference rooms, instructors' rooms, a professor's office and private toilets. On the sixth floor the upper part of the lecture hall occupies the center. At the top of this hall above the last row of seats is located the moving picture room which projects outside the building and is supported on huge stone corbels. Also on this floor is a map room with adjacent storage vaults. The lecture hall has a 6′ 6″ oak wainscoting with rough plaster walls above. In the plaster walls picture hook openings are countersunk at different levels to be used for hanging exhibitions of photographs or drawings. A large skylight illuminates this lecture hall. Four stairways and four elevators are included in the plan.

The basement is occupied almost entirely by the culinary department. Here are such rooms as the bakery with two ovens, a bread storage room and pantry with dumbwaiters, the steward's office, lavatories and locker rooms for the waiters and kitchen employees, a service elevator and service stairway, a butcher's room, linen room, vegetable preparing room, vegetable storeroom, bins for the storage of range coal with a lift to the kitchen above, and a service driveway through the basement for the delivery of supplies.



WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

Detail of entrance.



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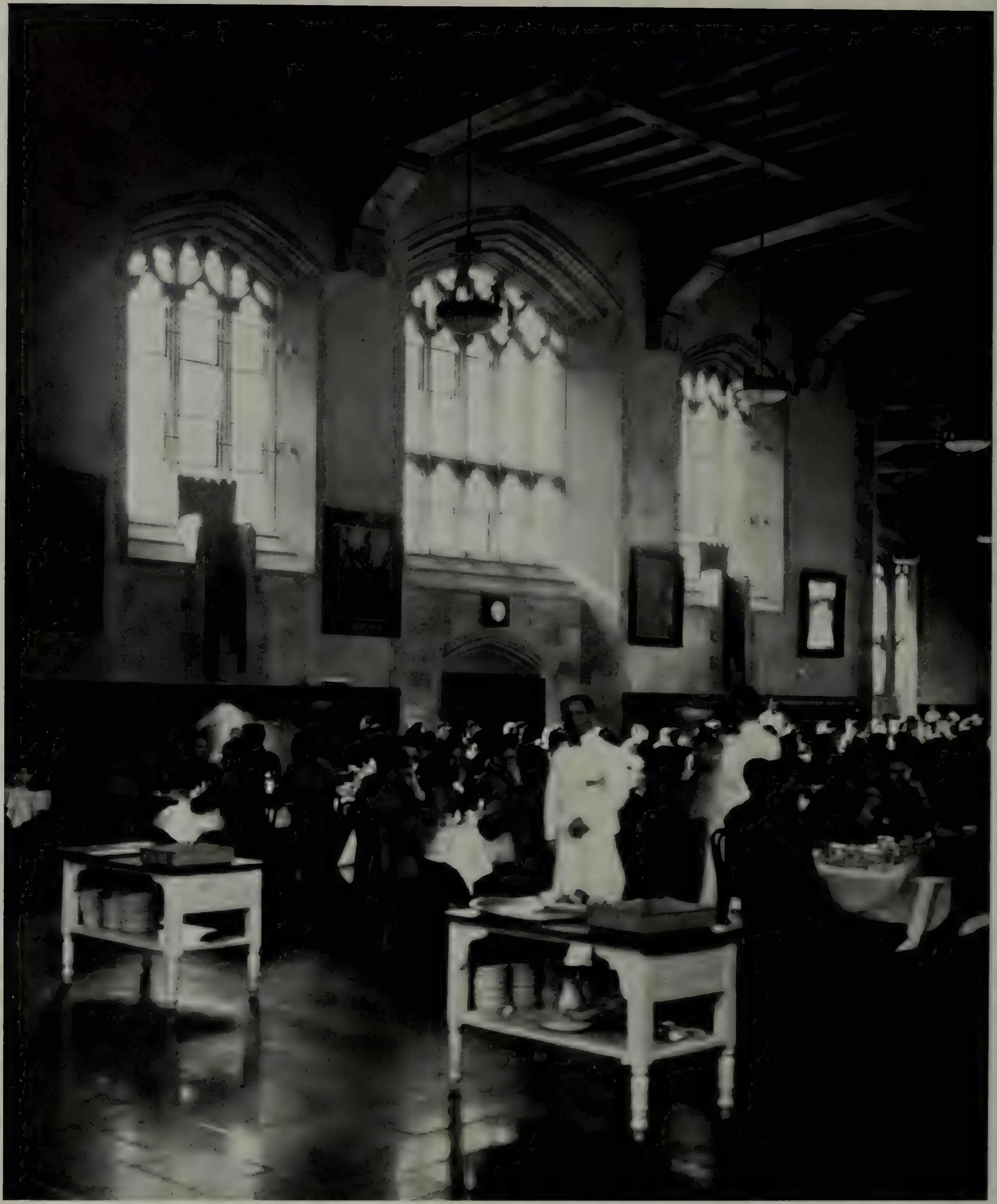
WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

Main entrance vestibule.



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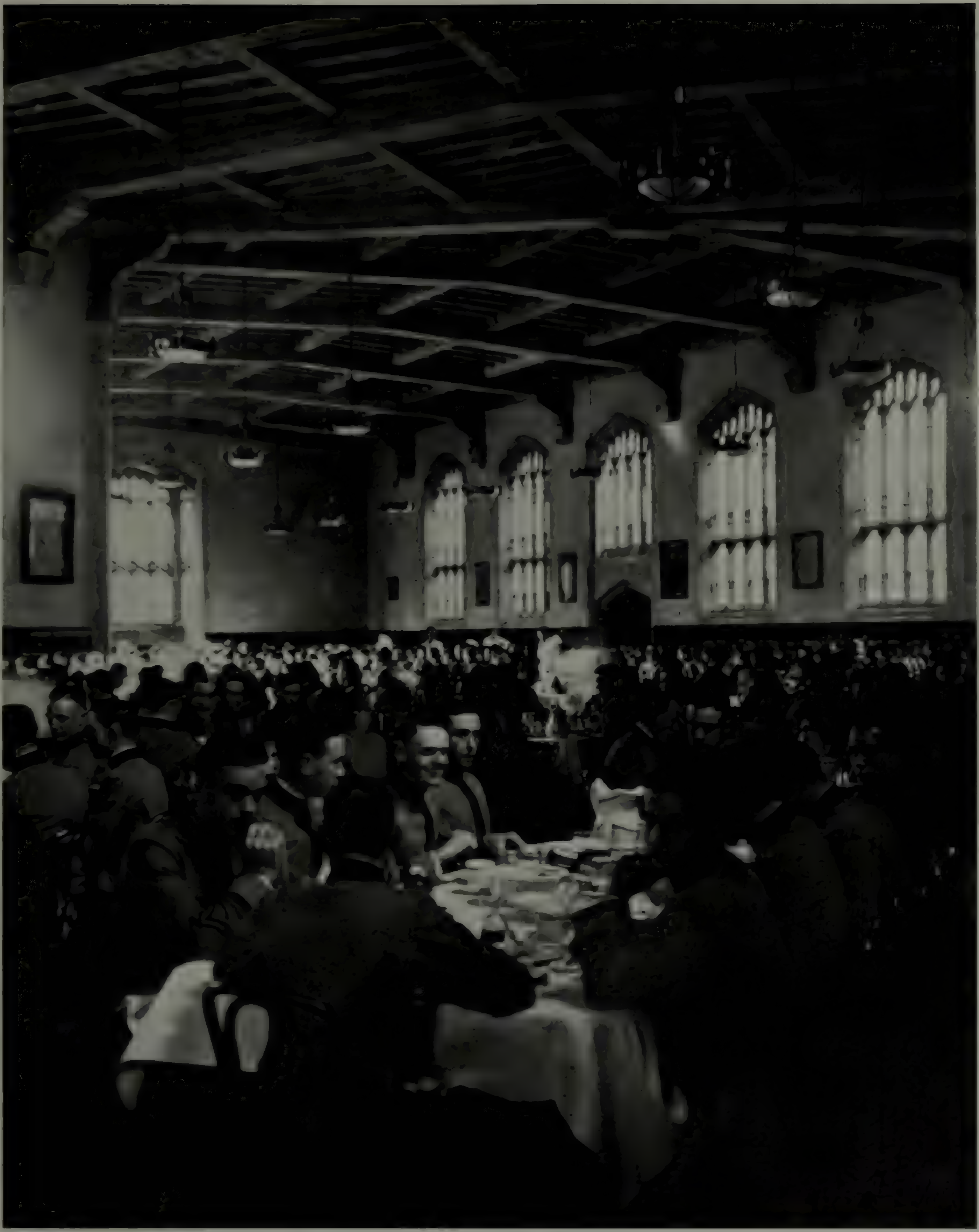
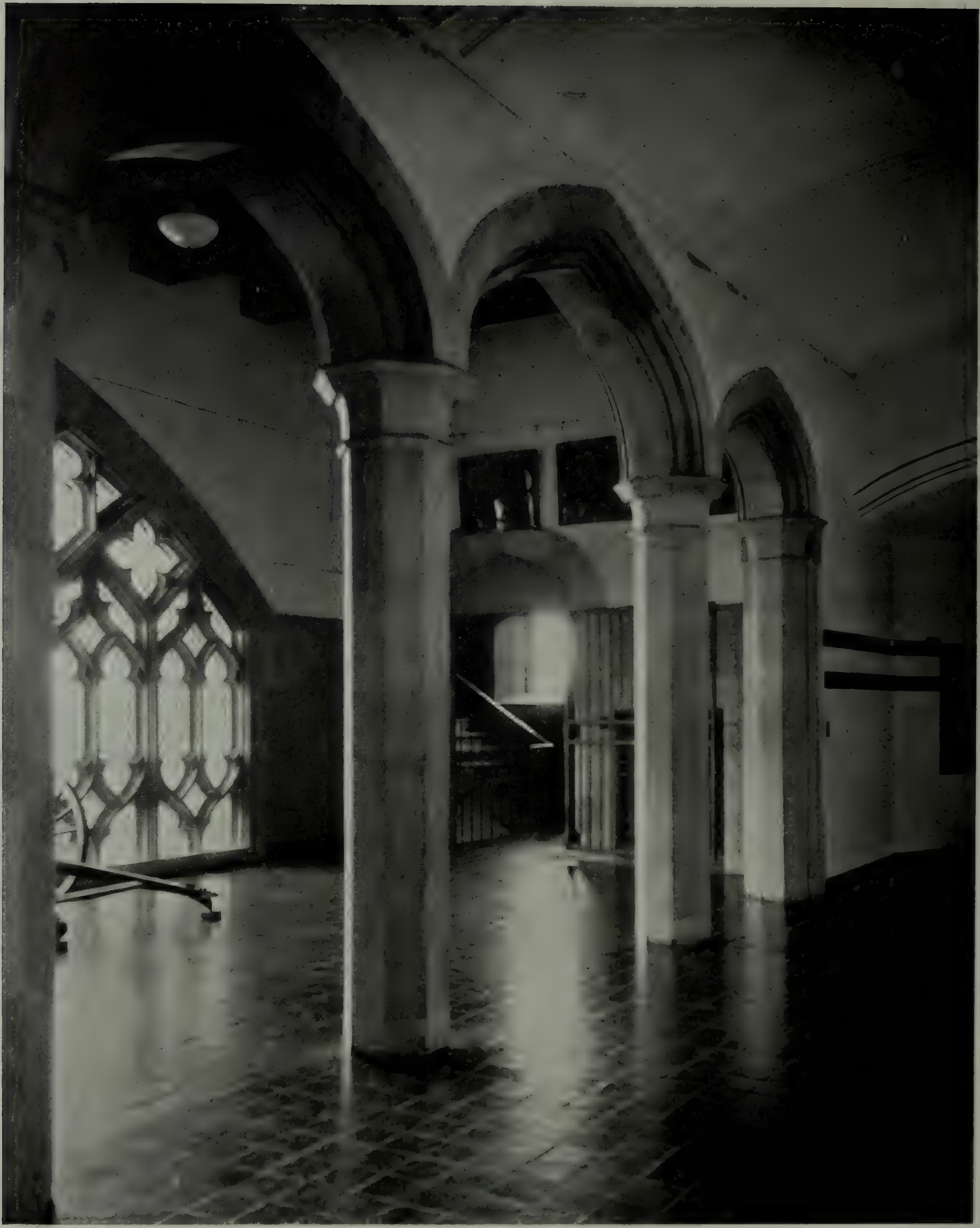
WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS



Gleason

WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

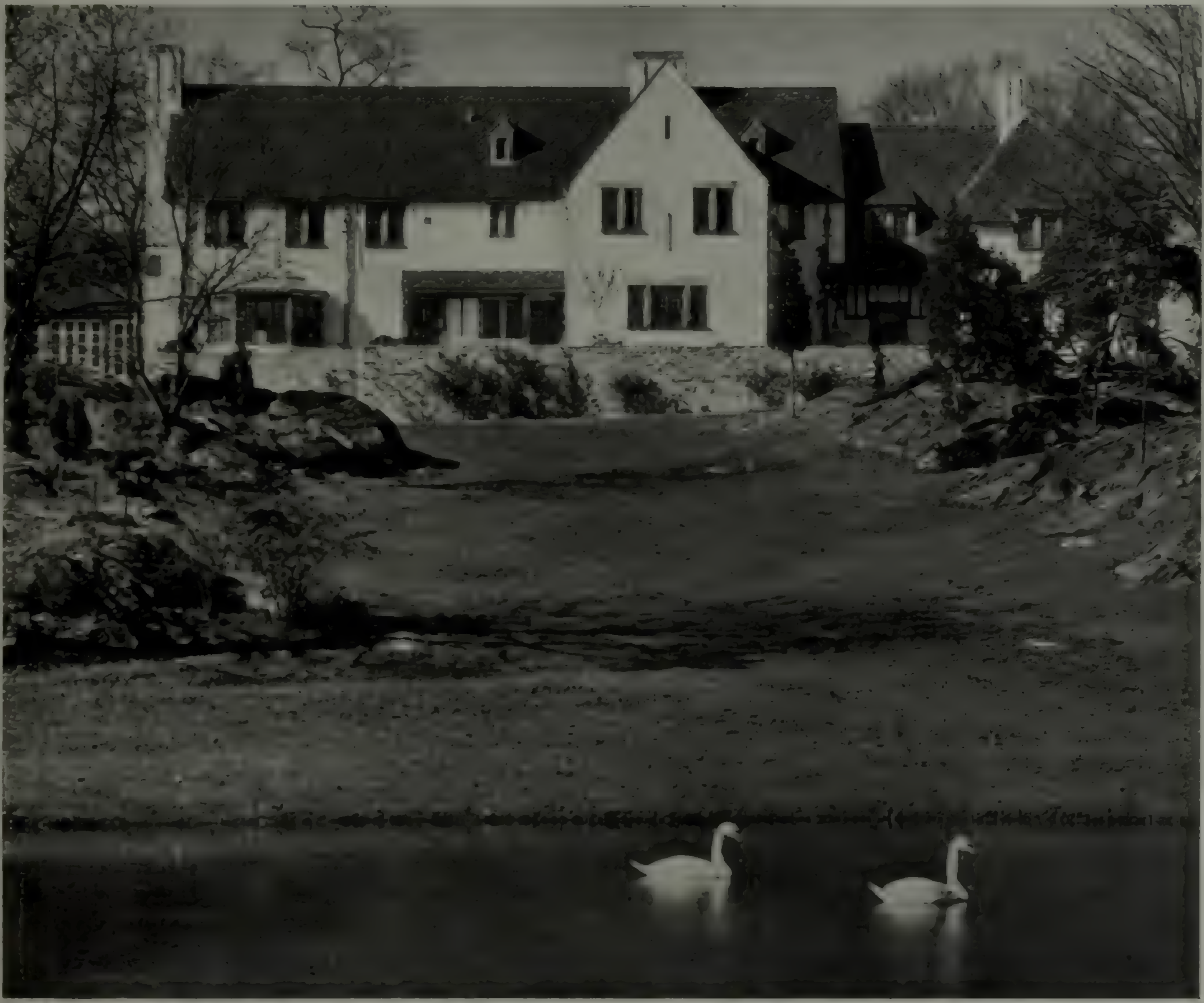


Gilkison

WASHINGTON HALL, UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK
GEHRON AND ROSS, ARCHITECTS

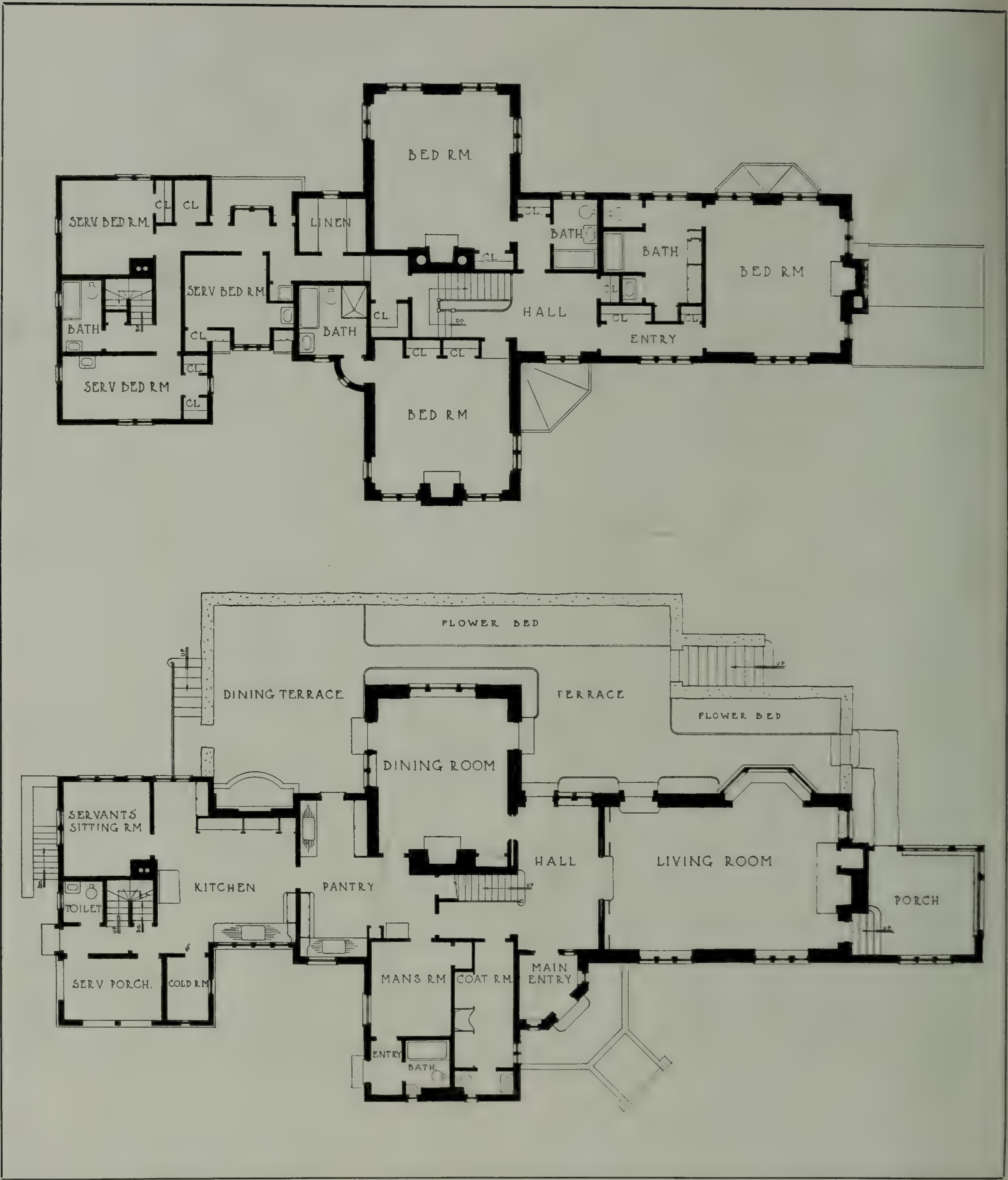
Foyer at entrance to lecture room.

PORTFOLIO OF CURRENT ARCHITECTURE

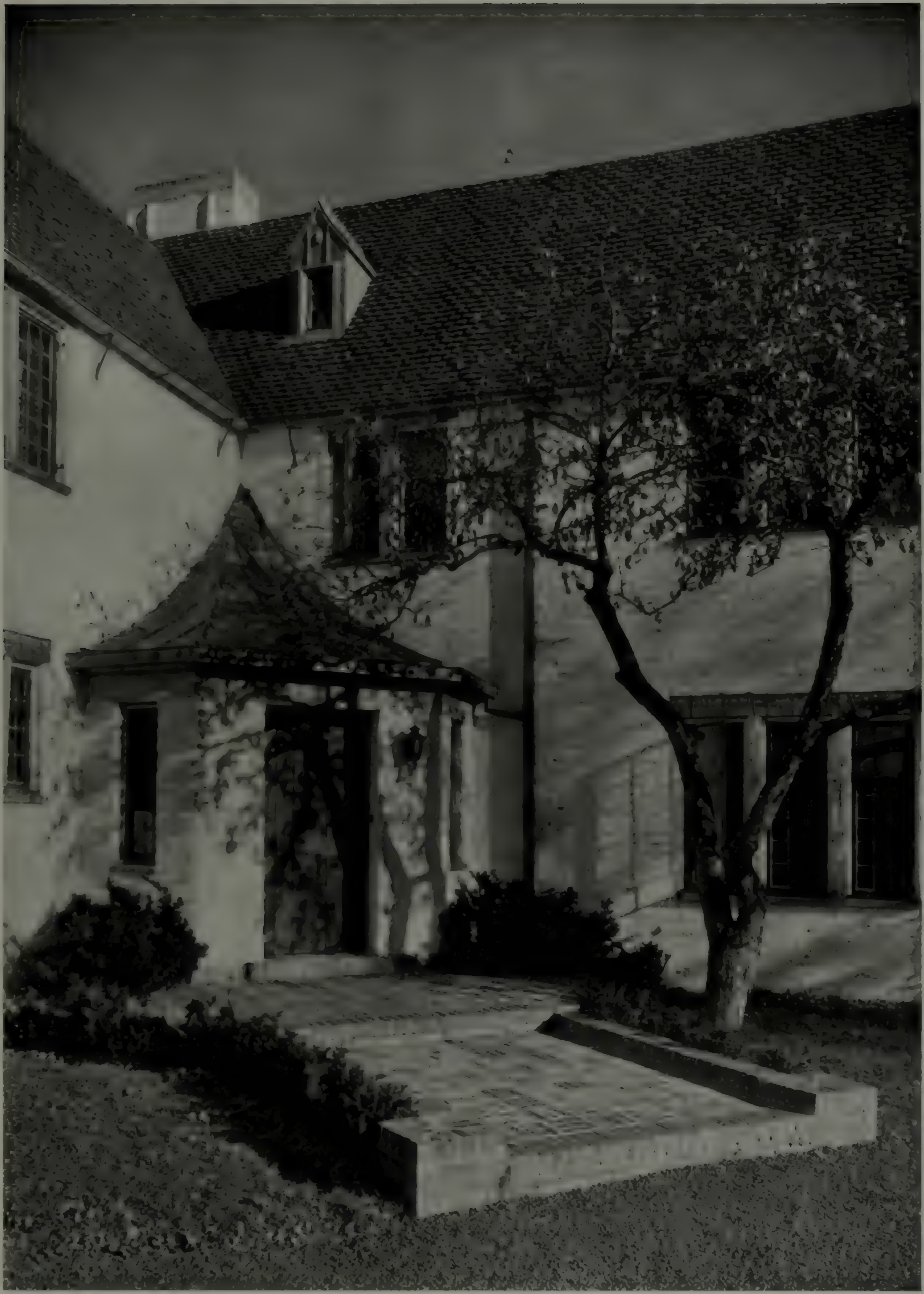


Gottscho

HOUSE OF F. S. SMITHERS
GREENWICH, CONNECTICUT
EDWARD C. DEAN, ARCHITECT



HOUSE OF F. S. SMITHERS
GREENWICH, CONNECTICUT
EDWARD C. DEAN, ARCHITECT



Gottscho

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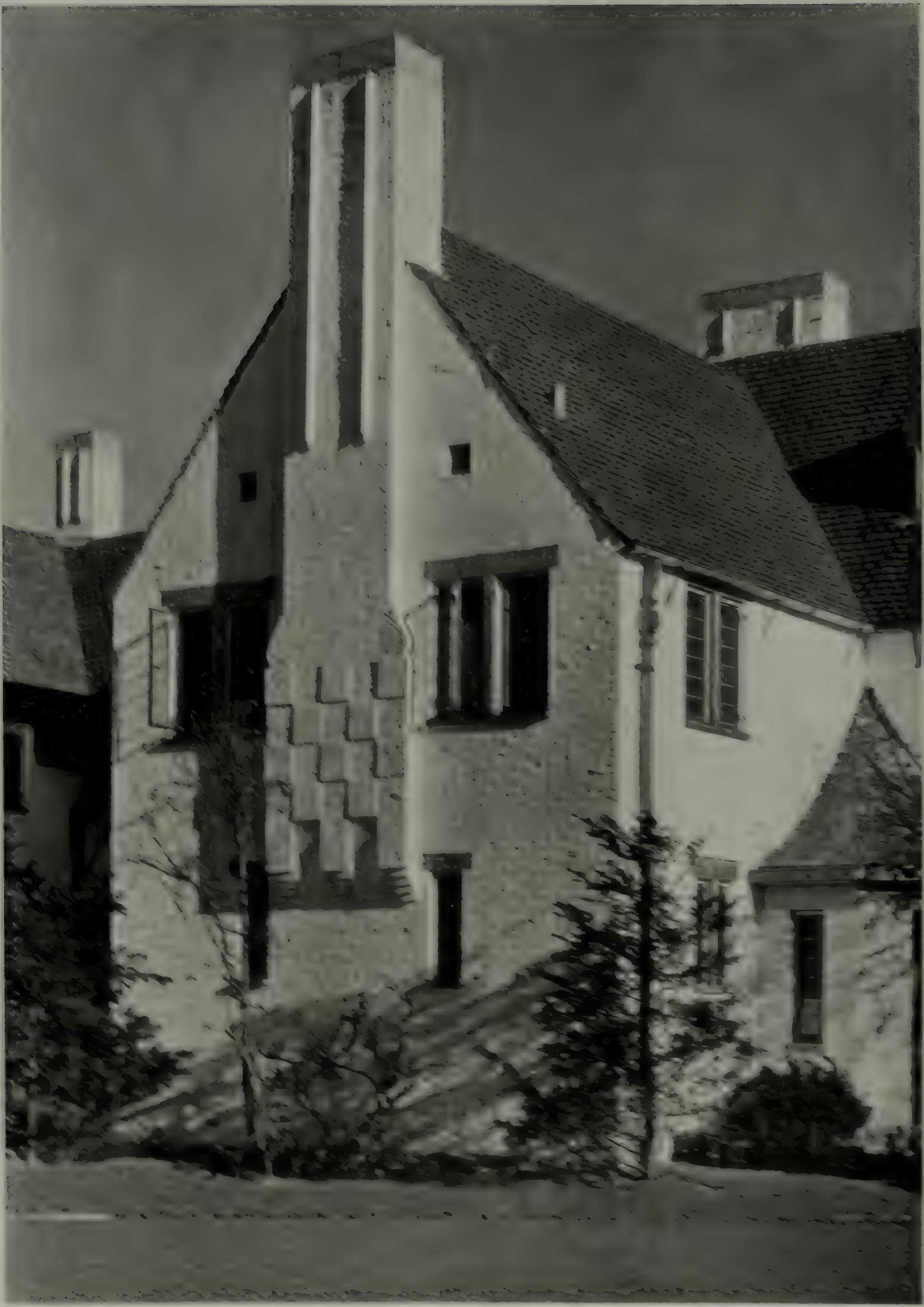
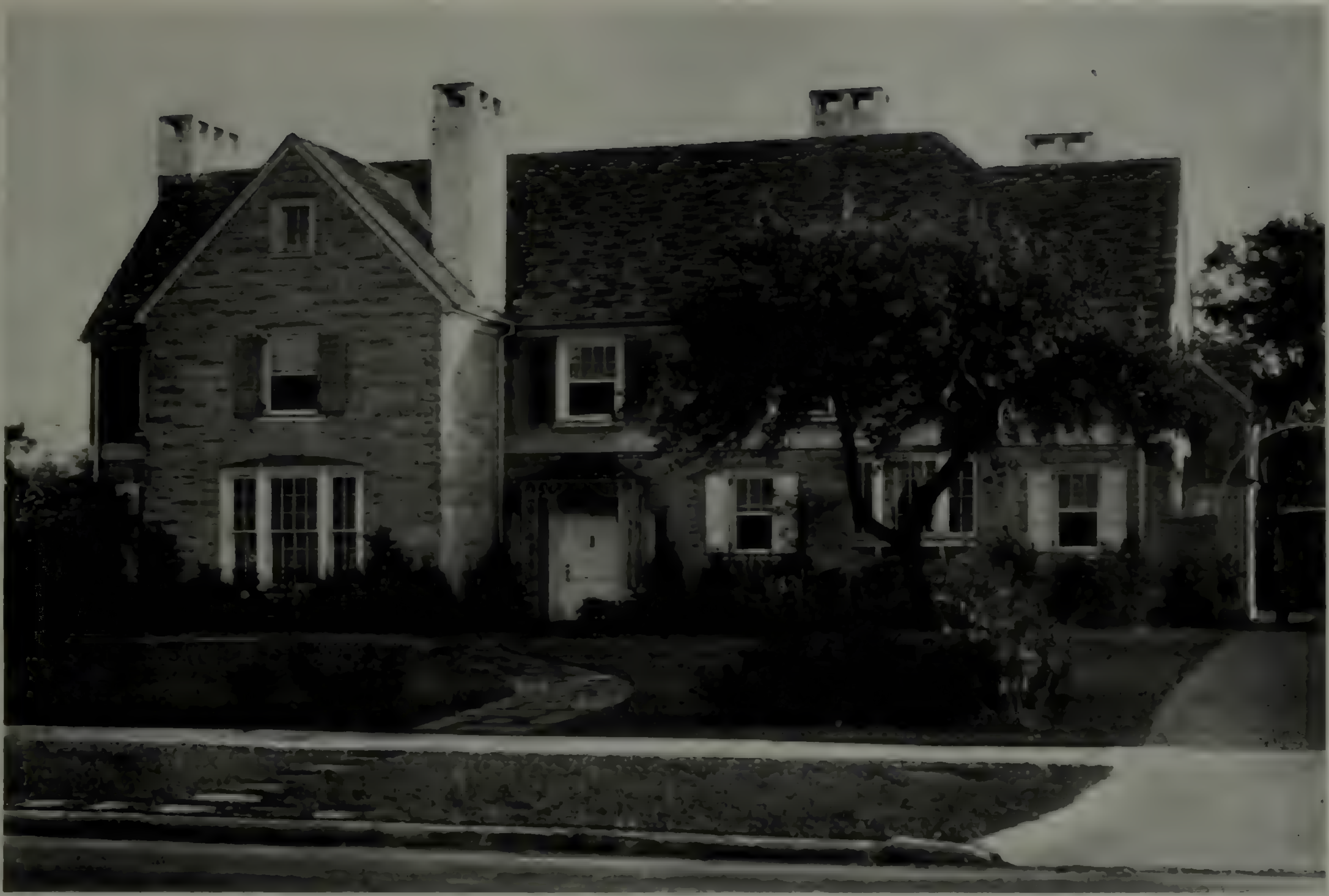
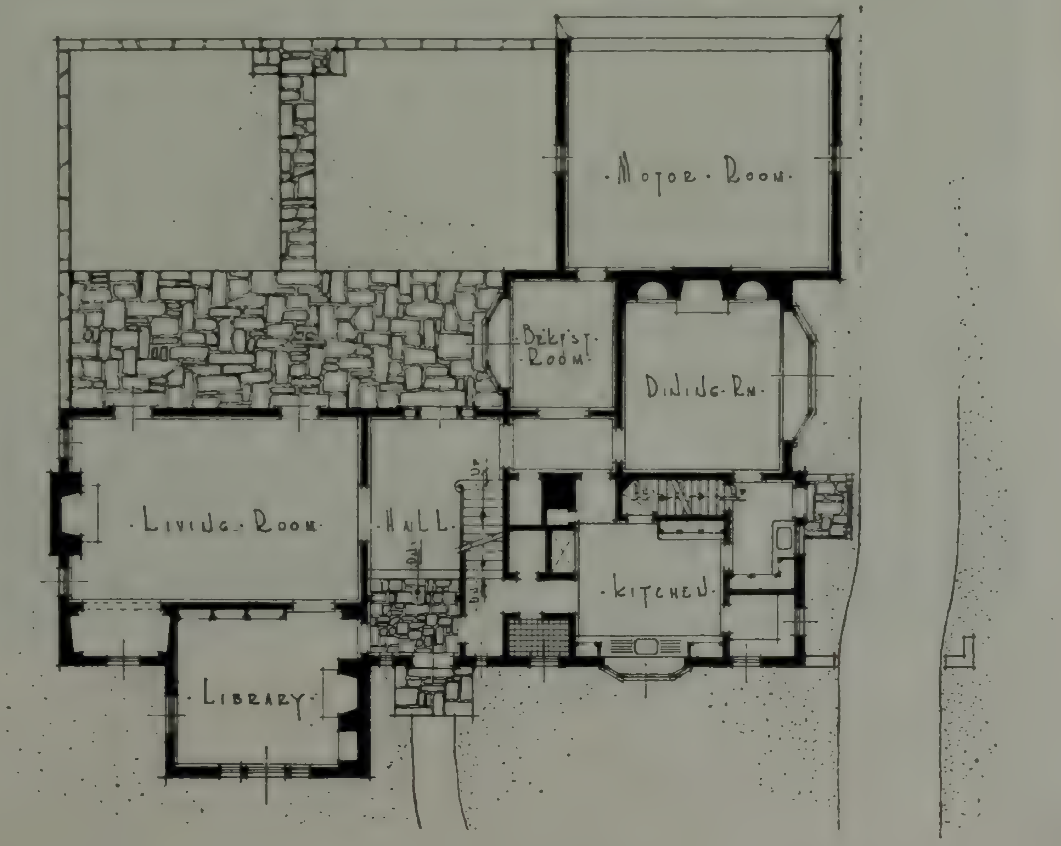
GREENWICH, CONNECTICUT
EDWARD C. DEAN, ARCHITECT

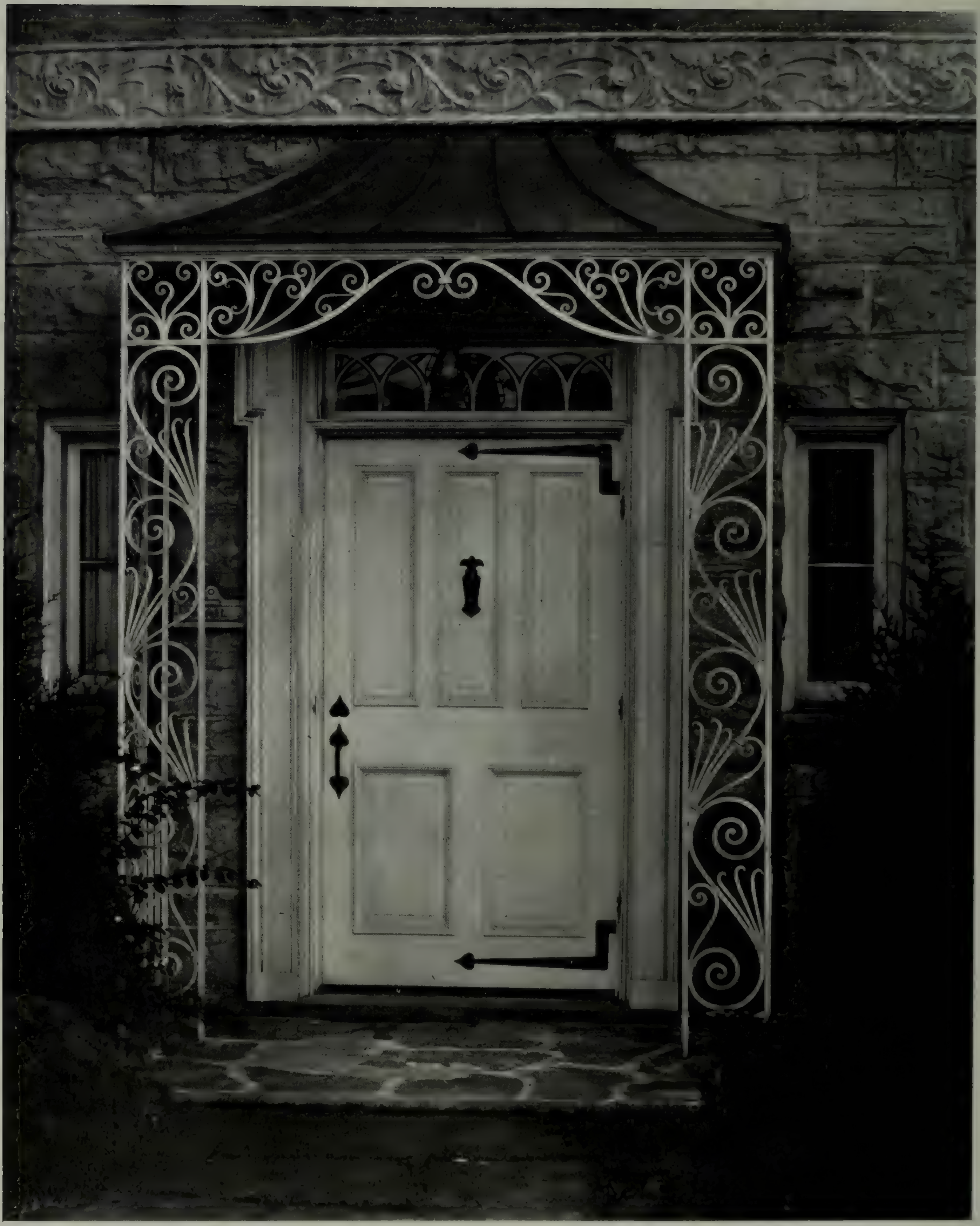


HOUSE OF F. E. SMITHERS
GREENWICH, CONNECTICUT
EDWARD C. DEAN, ARCHITECT



HOUSE OF MR. AND MRS. L. M. GUNDERSEN
CLEVELAND HEIGHTS, OHIO
DUNN AND COPPER, ARCHITECTS





HOUSE OF MR. AND MRS. L. M. GUNDERSEN
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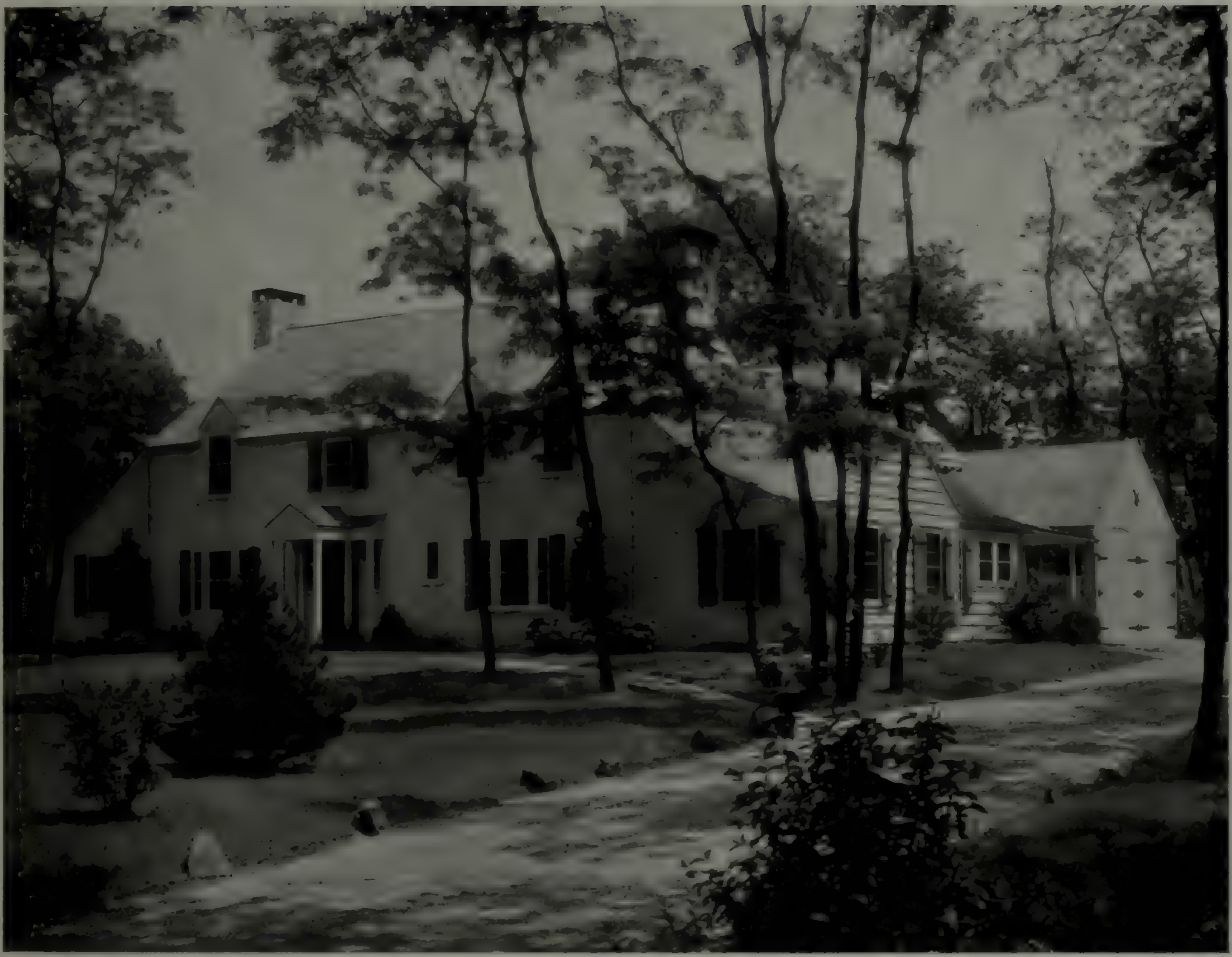
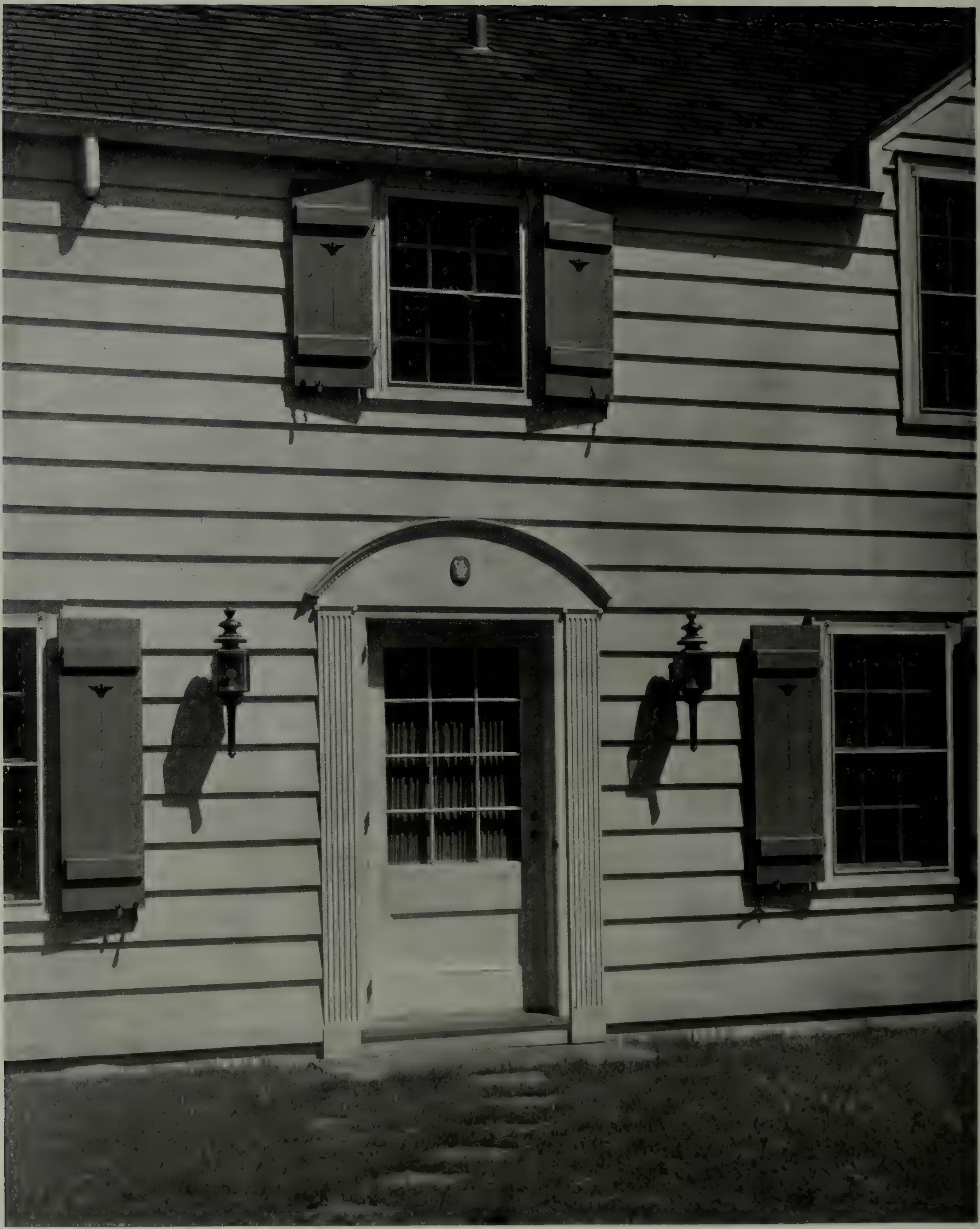
DUNN AND COPPER, ARCHITECTS



Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

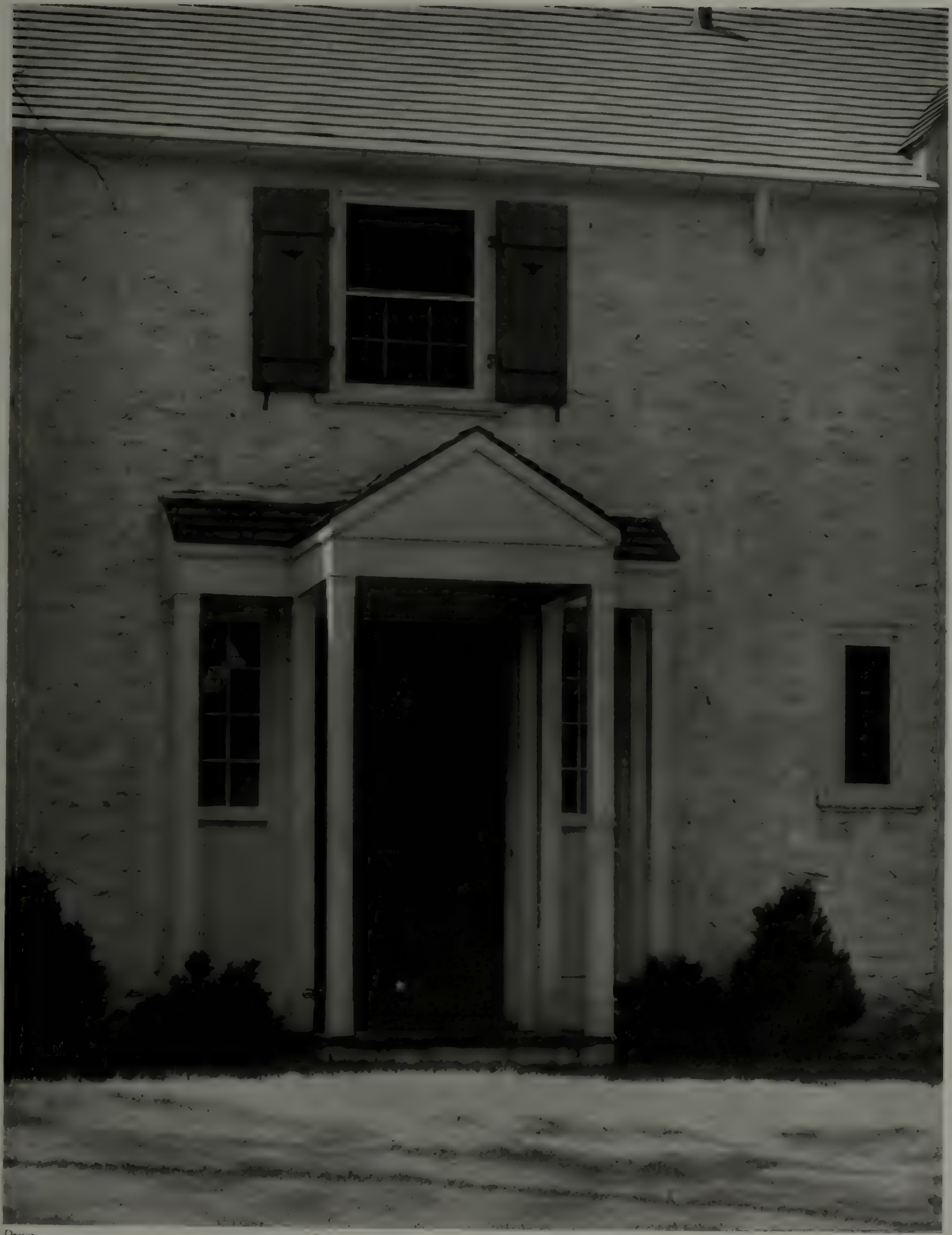
Entrance front.



Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

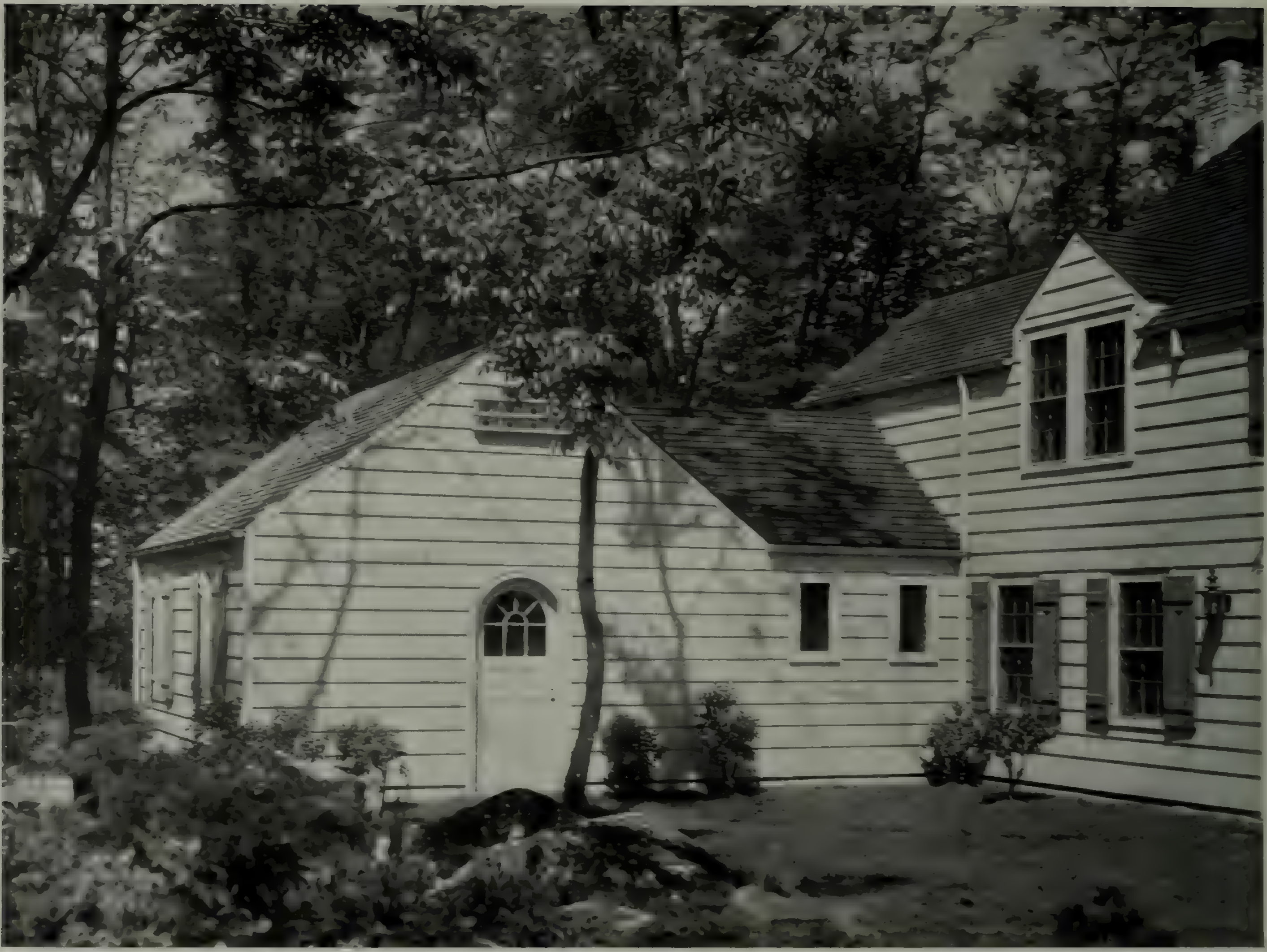
Garden entrance.



Dreyer

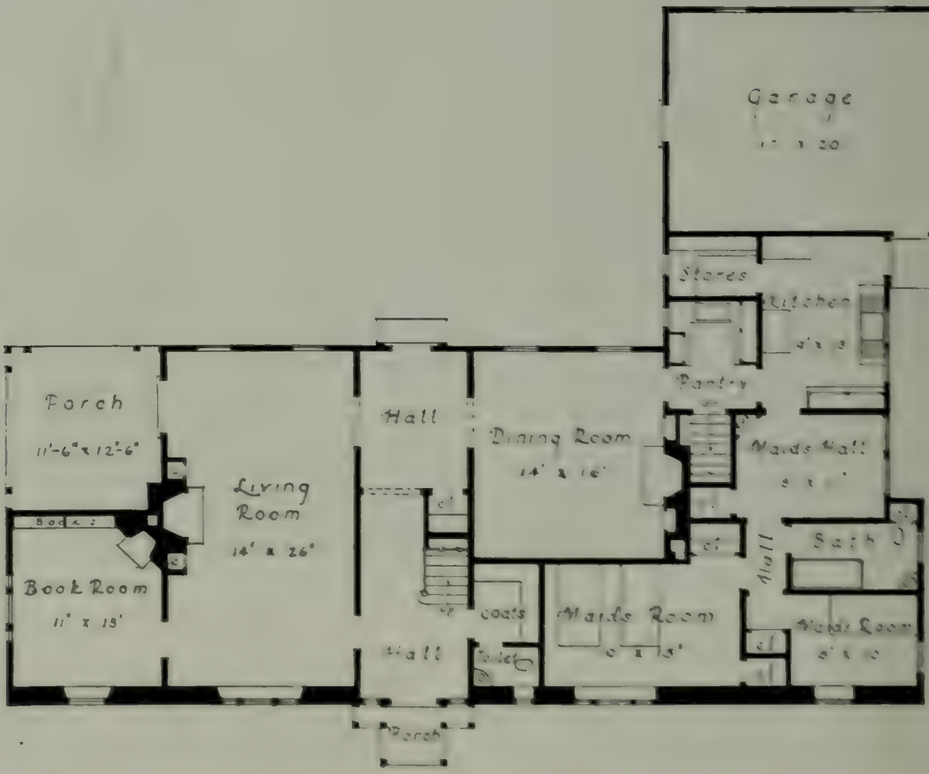
HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

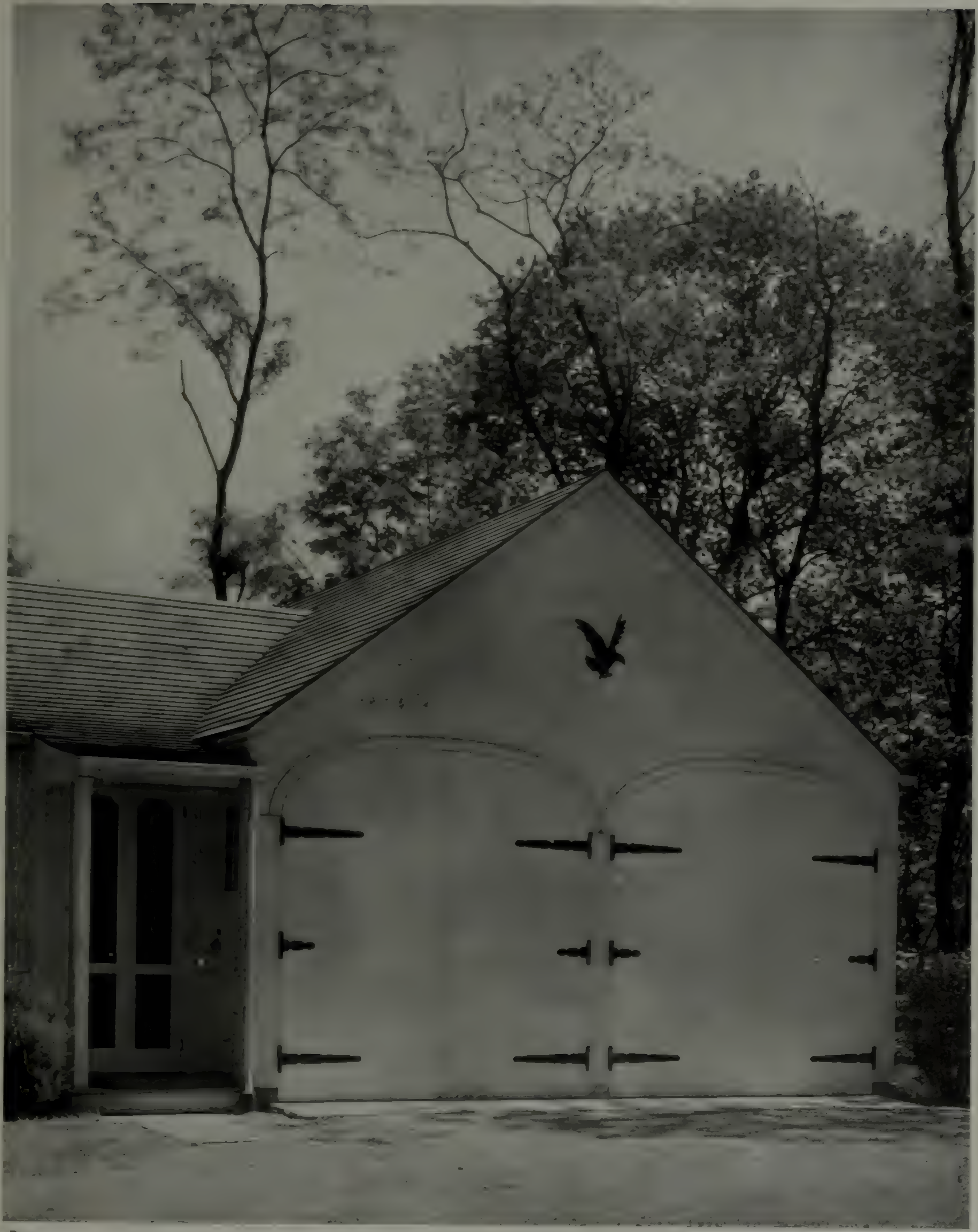
Entrance doorway.



Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

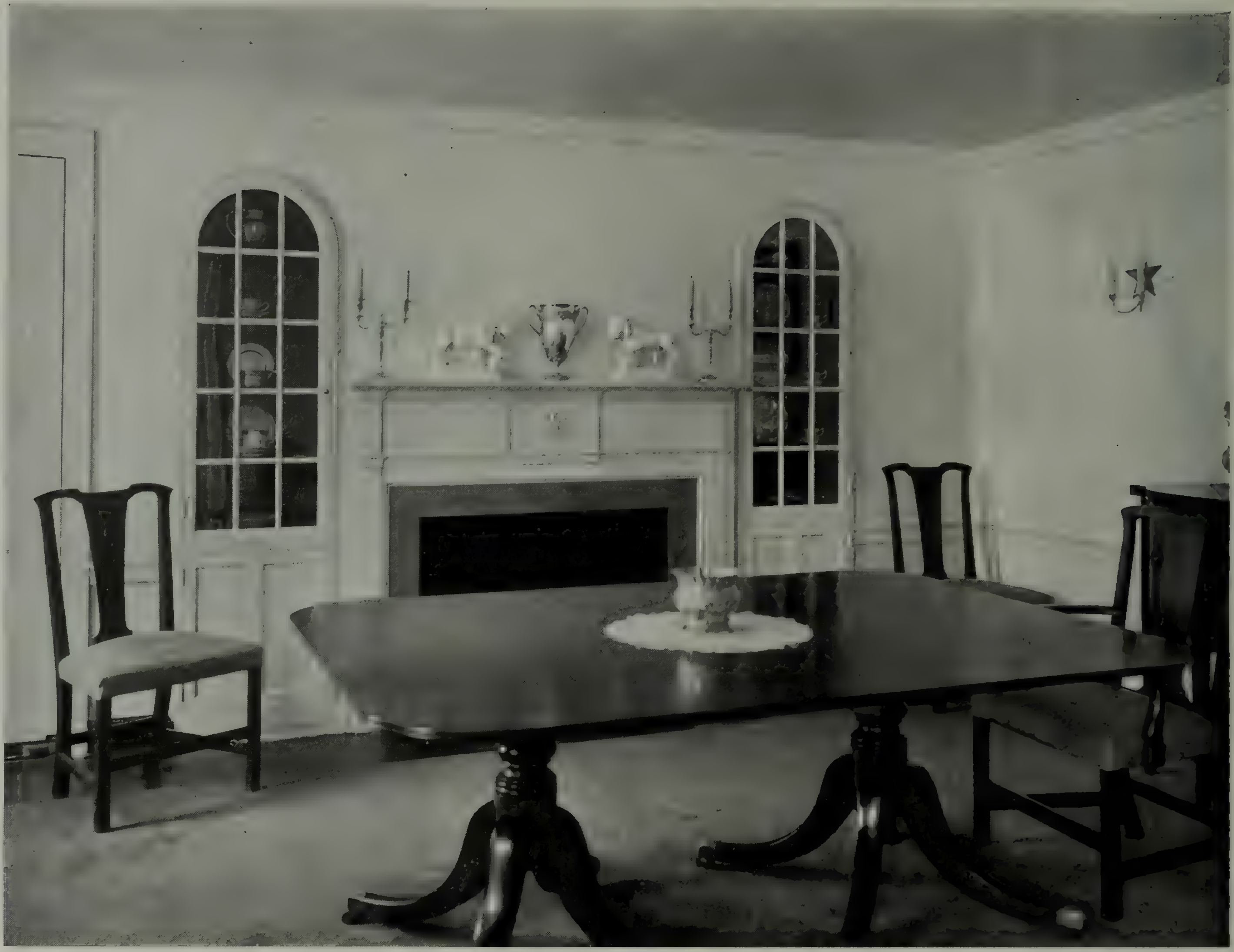




Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

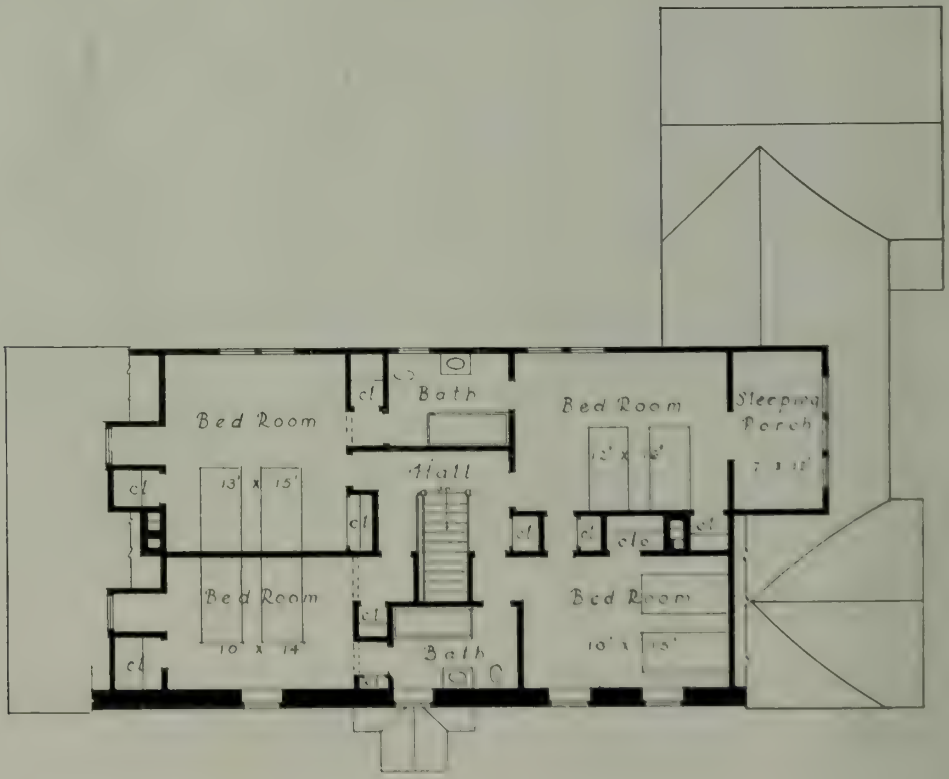
Garage and service entrance.

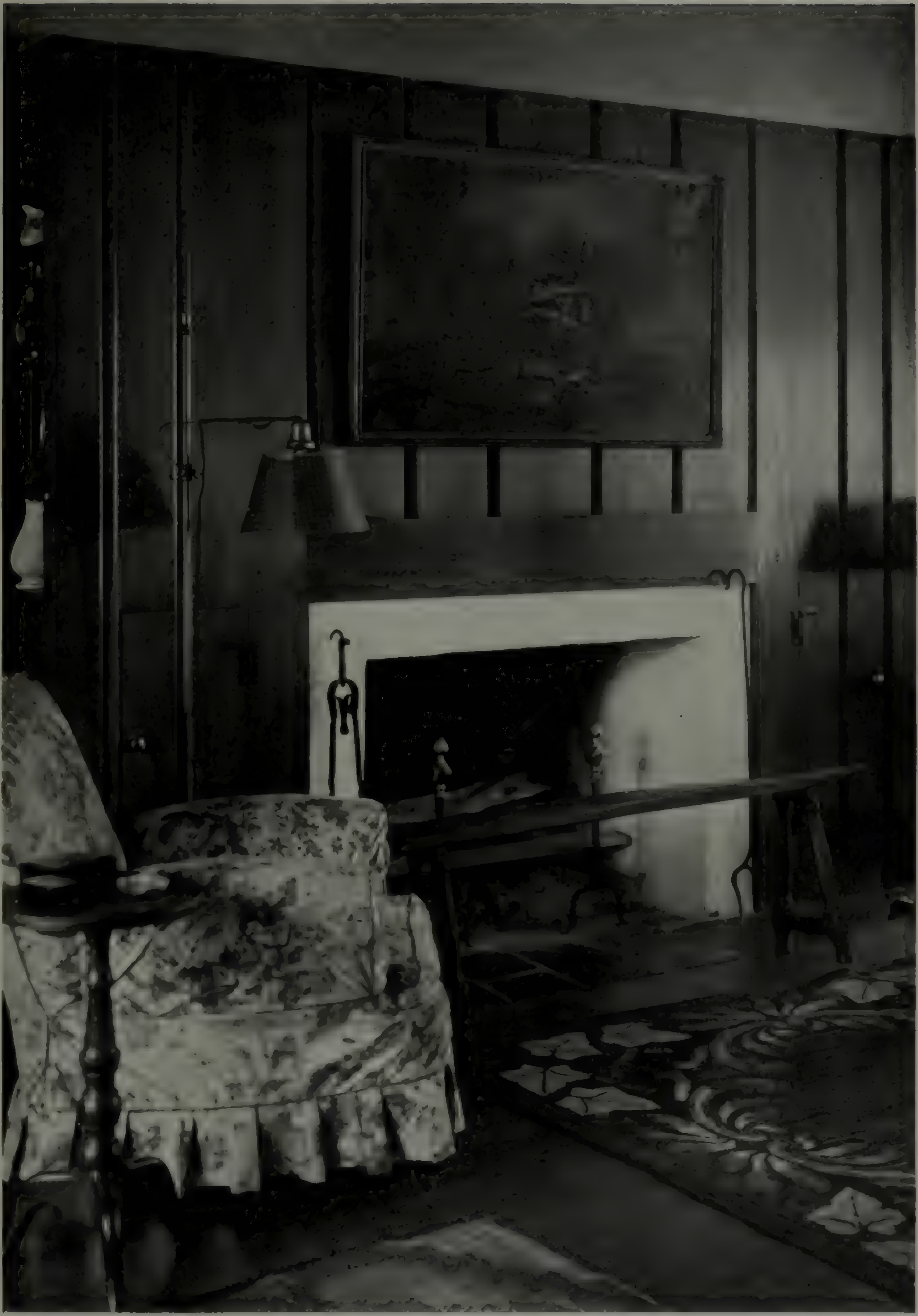


Dreyer

HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Dining room.



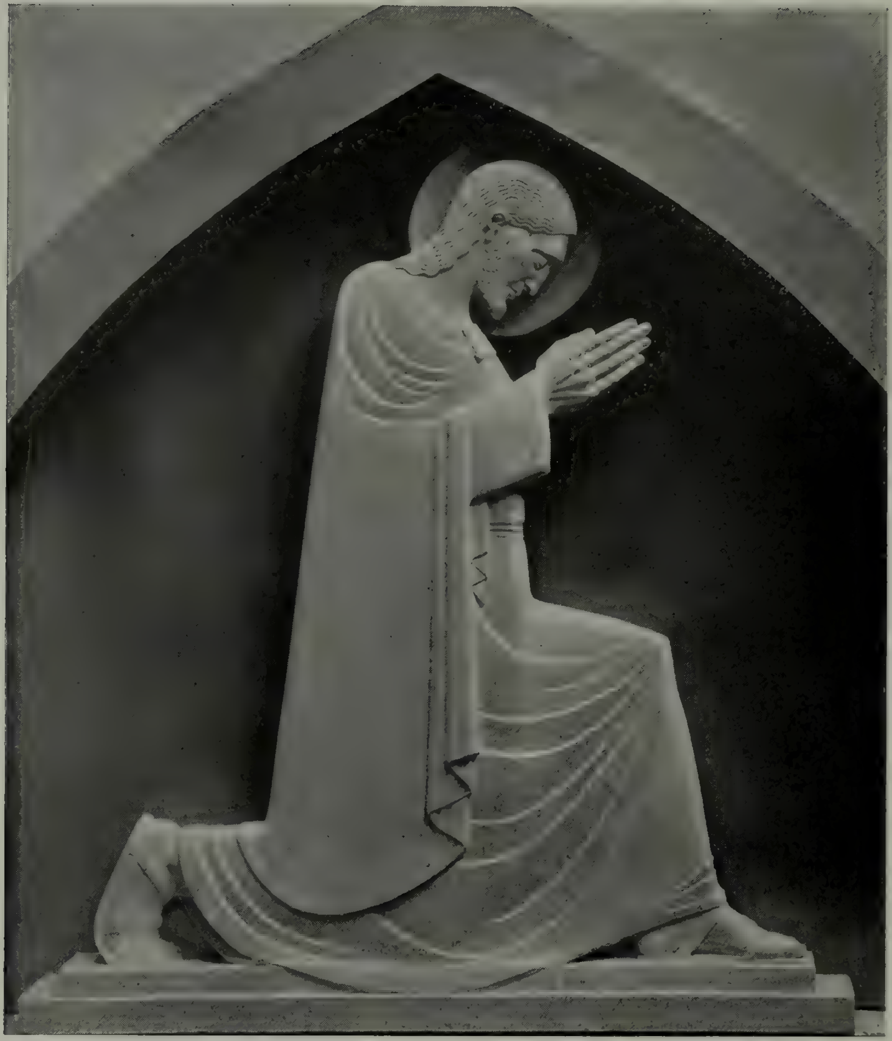


Dreyer

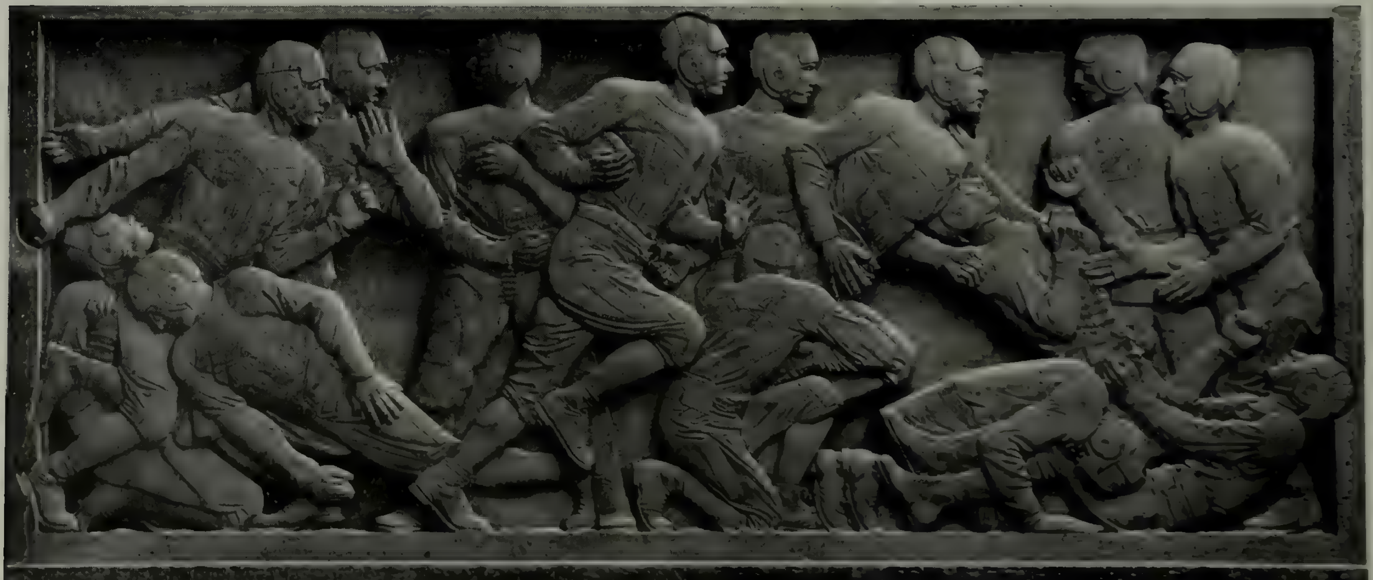
HOUSE OF GEORGE E. STEVENS
DARIEN, CONNECTICUT
CHARLES S. KEEFE, ARCHITECT

Living room fireplace.

Sculpture executed by David Evans, sculptor, while instructing at Cranbrook Academy of Art, Cranbrook, Michigan, 1929–1930.

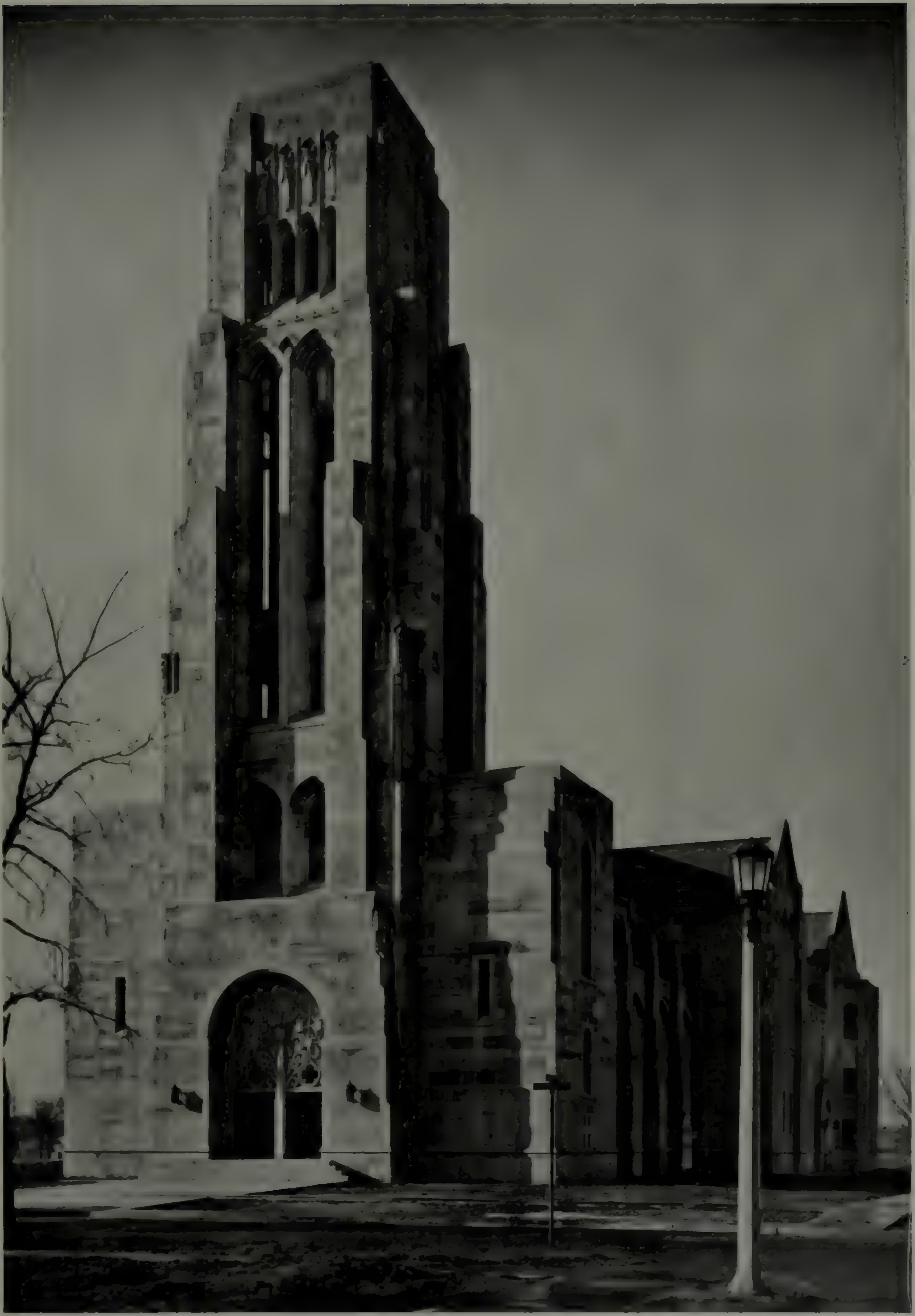


"CHRIST IN PRAYER"
CHRIST CHURCH
CRANBROOK, MICHIGAN

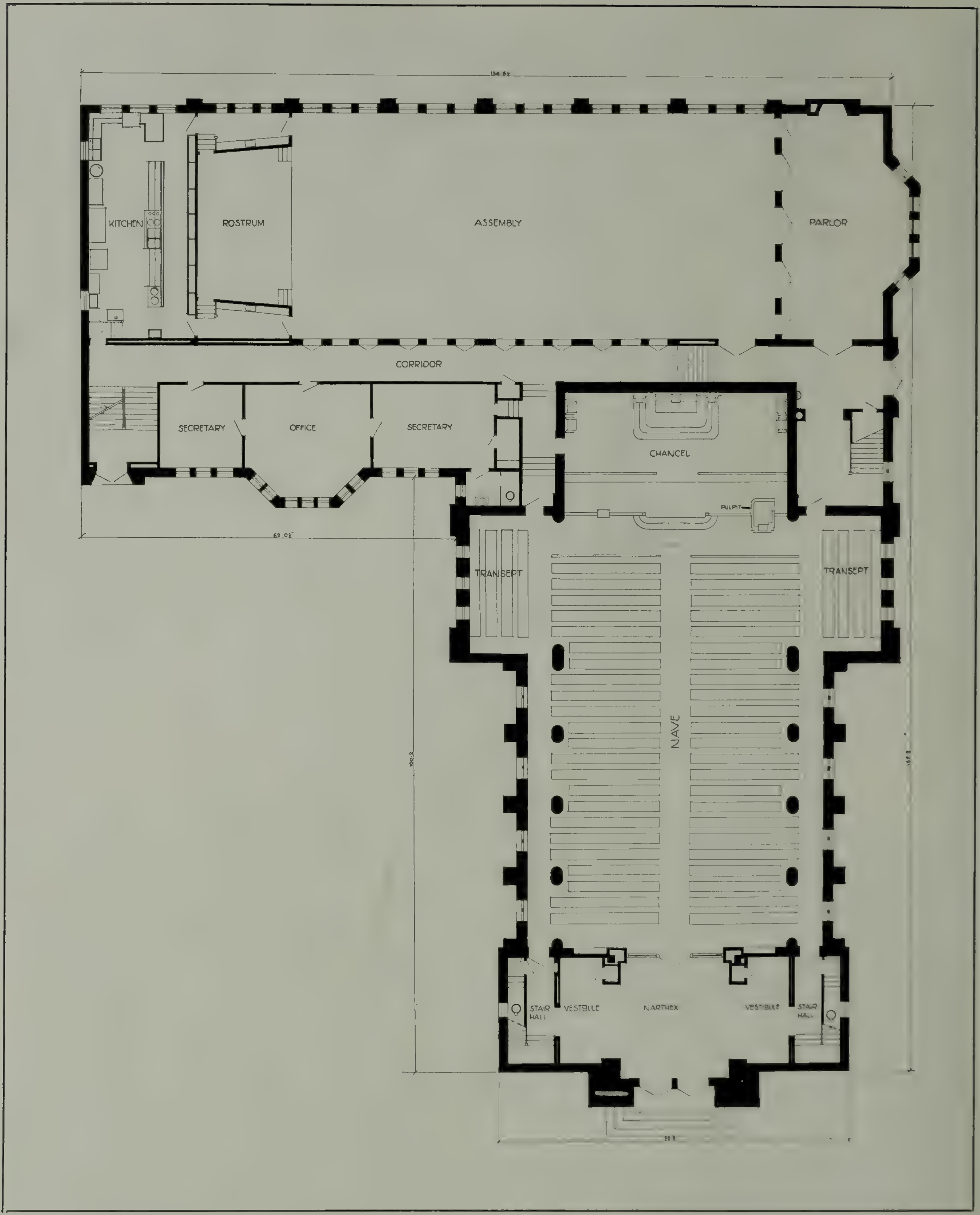


Arnold Studio

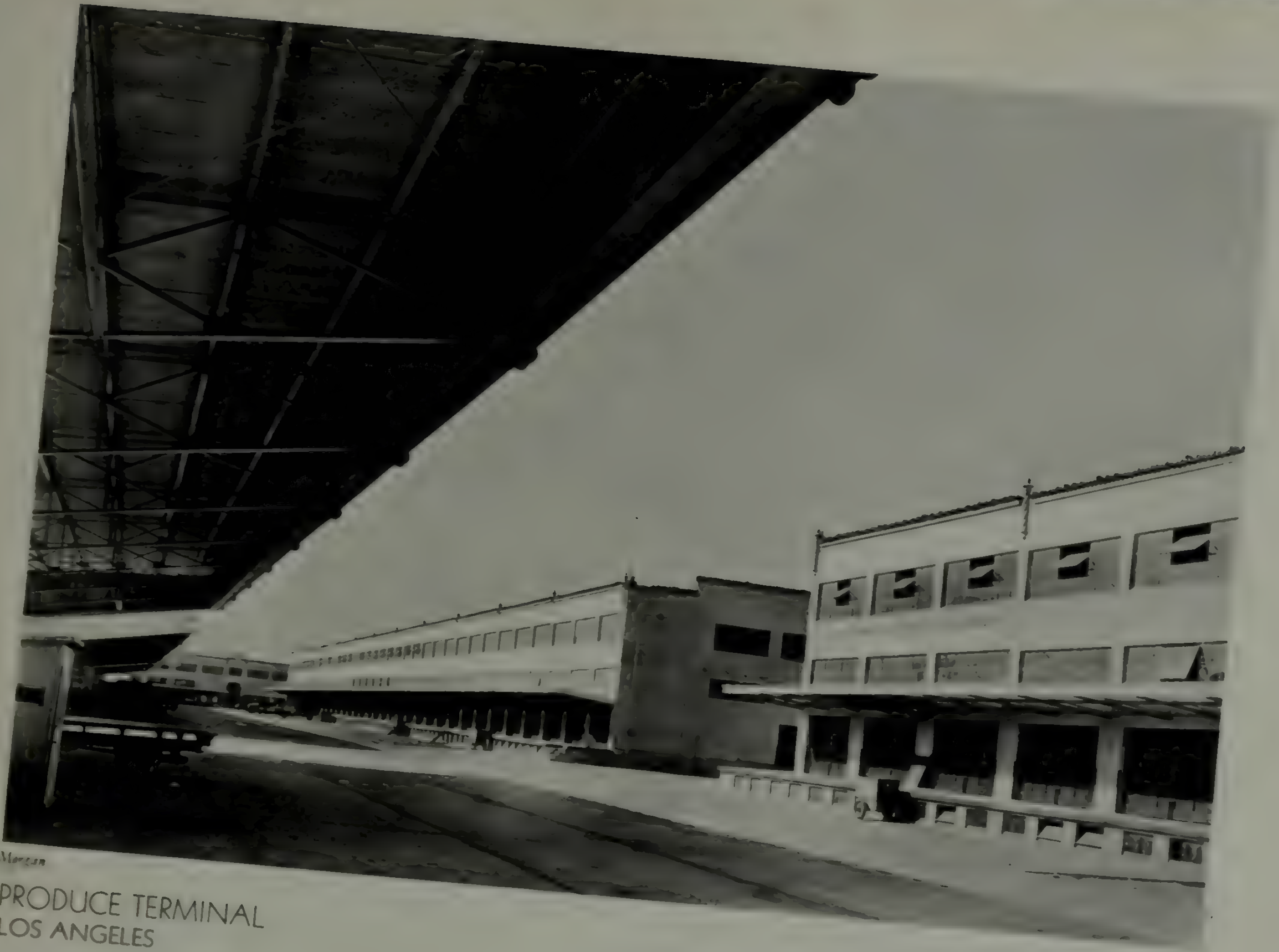
"FOOTBALL" A RELIEF IN BRONZE
ERECTED AT CRANBROOK SCHOOL FOR BOYS, MICHIGAN



GRACE EVANGELICAL LUTHERAN CHURCH
RIVER FOREST, ILLINOIS
TALLMADGE AND WATSON, ARCHITECTS

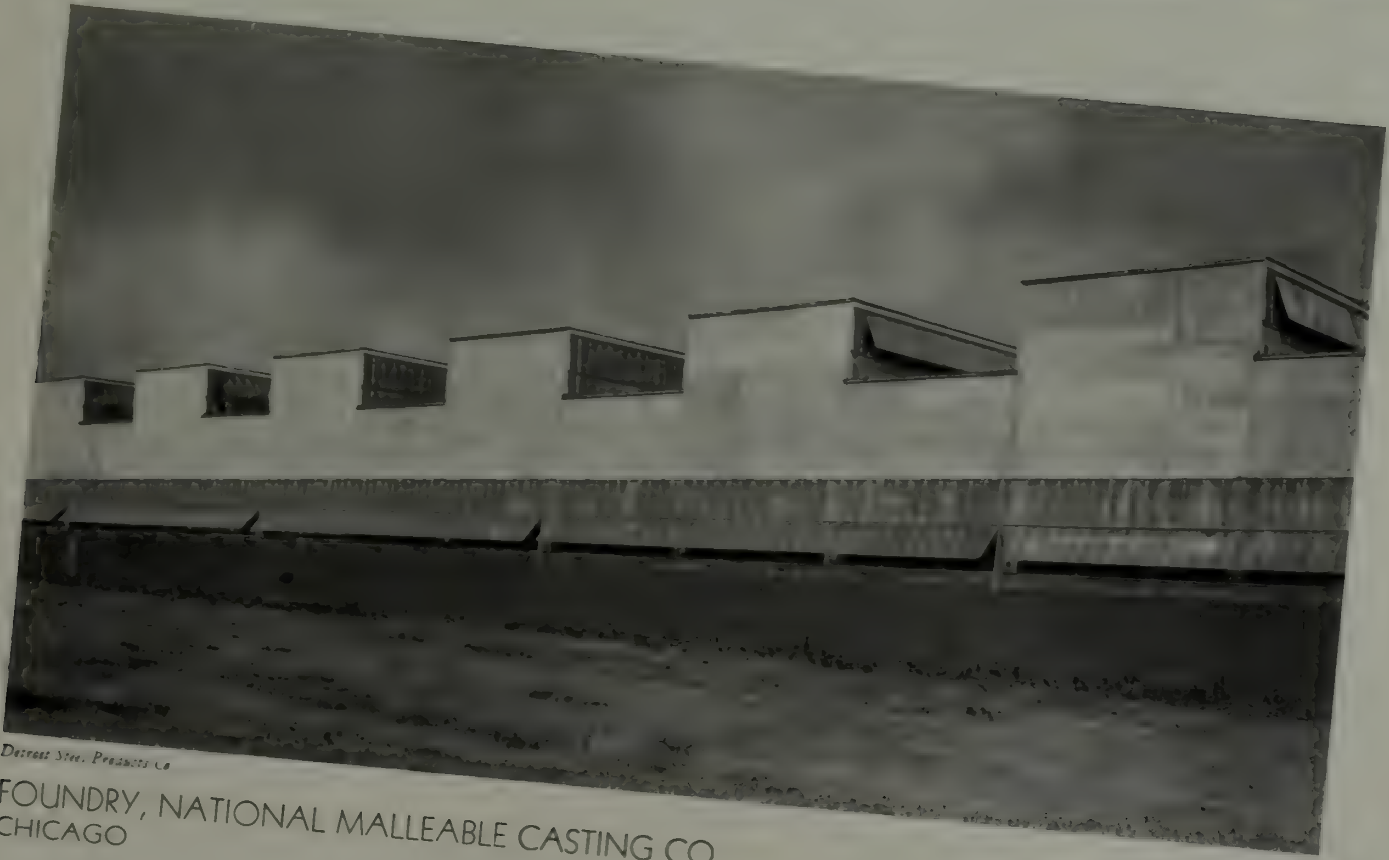


GRACE EVANGELICAL LUTHERAN CHURCH
RIVER FOREST, ILLINOIS
TALLMADGE AND WATSON, ARCHITECTS



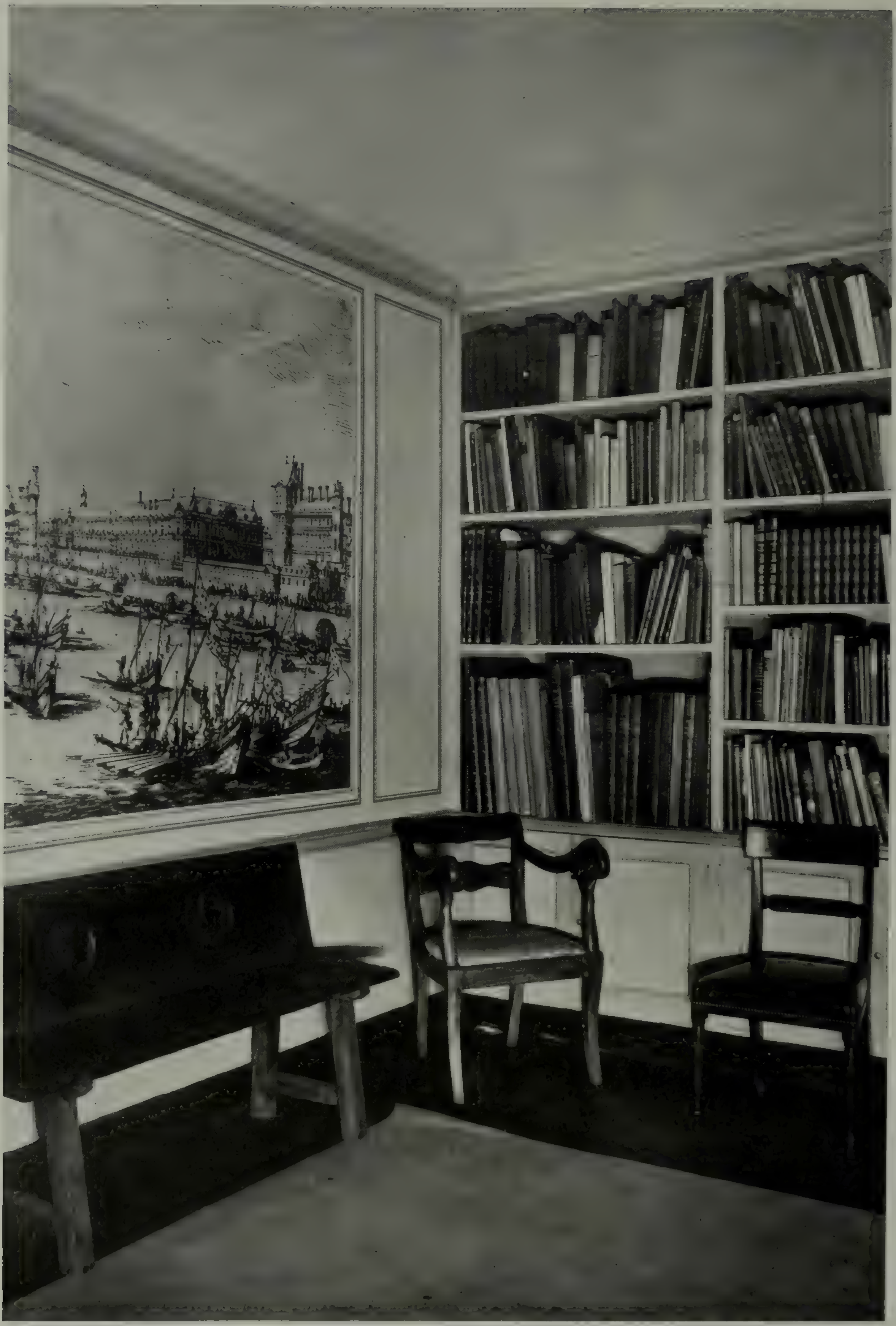
Morgan

PRODUCE TERMINAL
LOS ANGELES



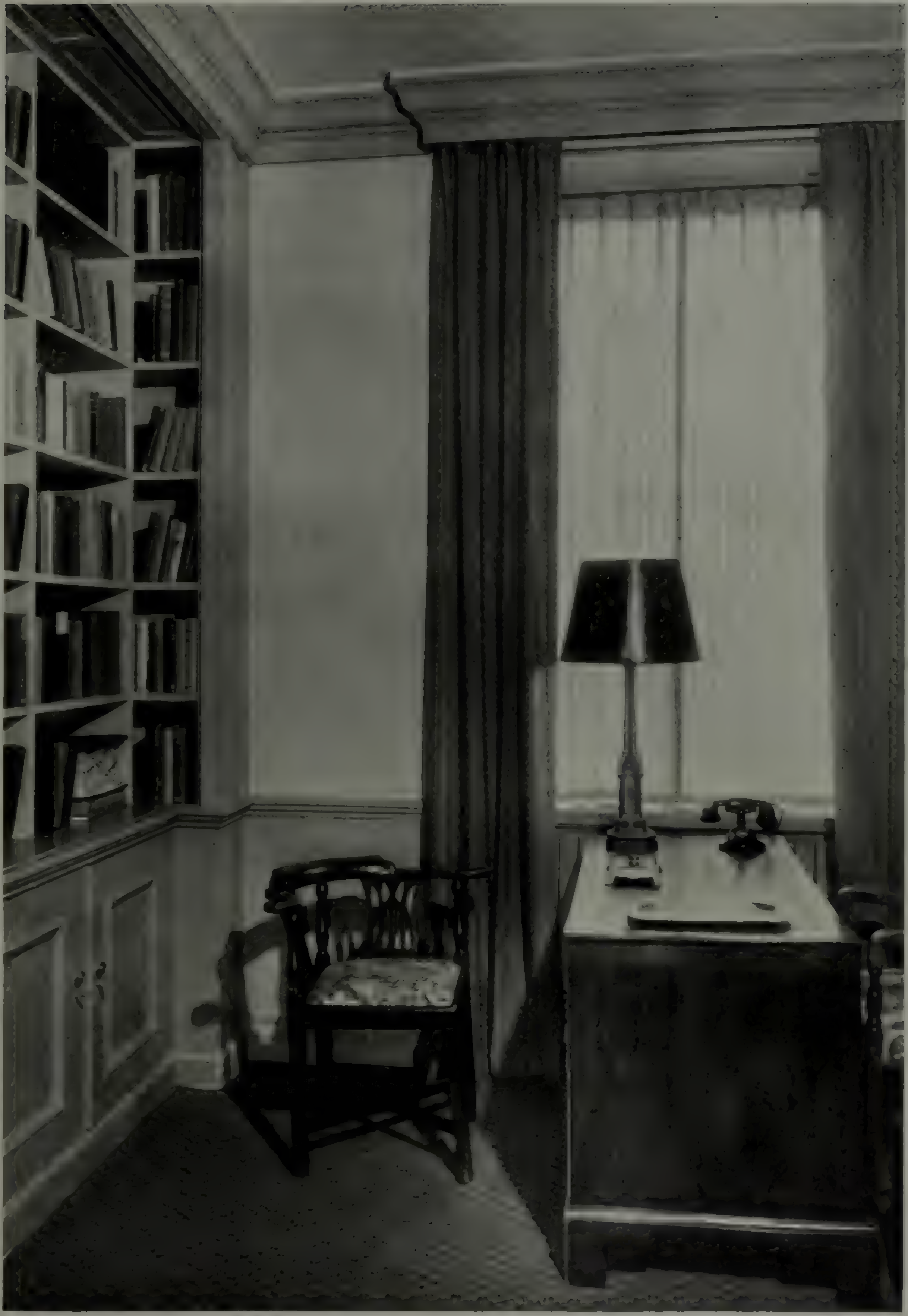
Detroit Stee. Products Co

FOUNDRY, NATIONAL MALLEABLE CASTING CO.
CHICAGO



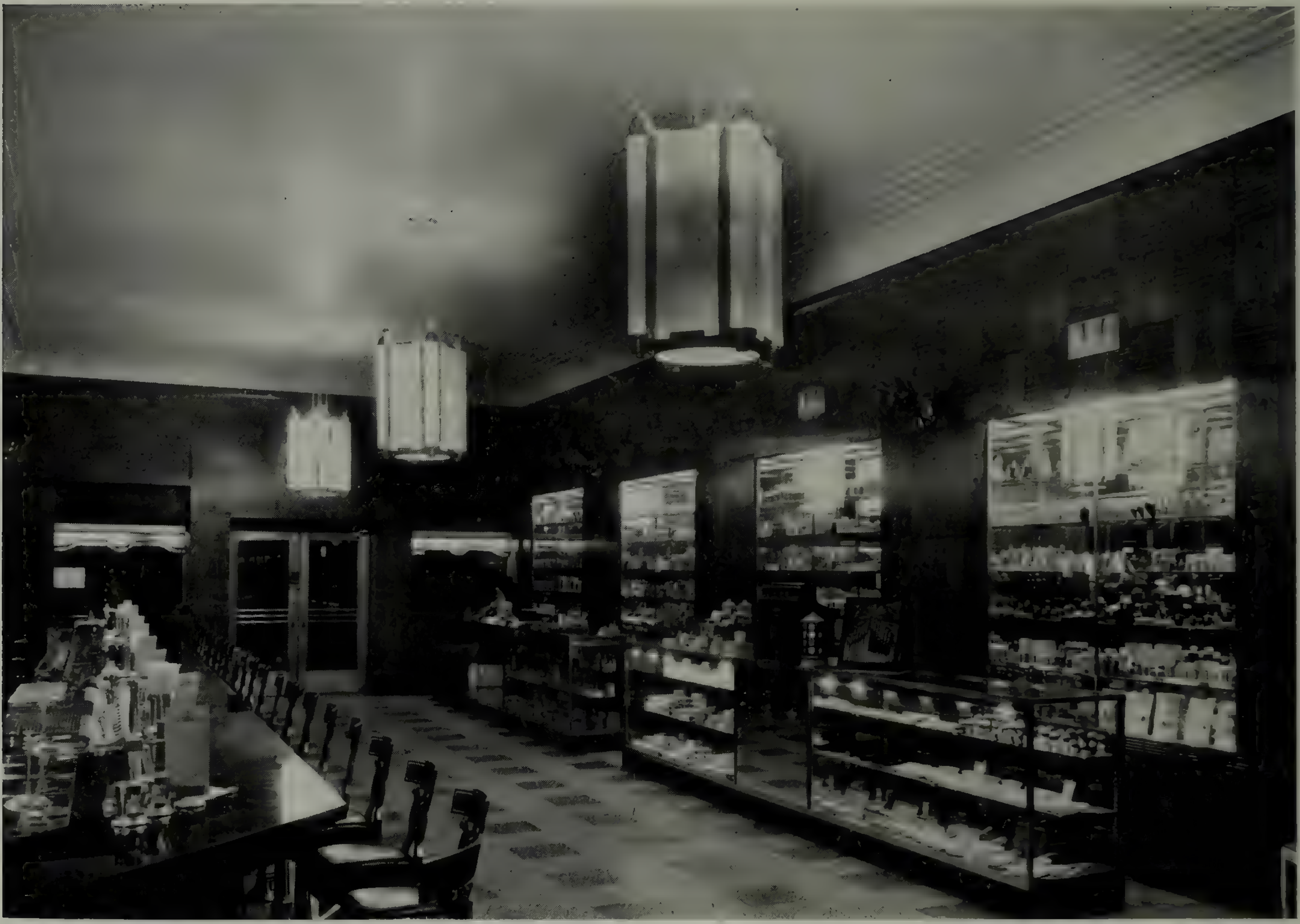
Van Anda

LIBRARY IN NEW YORK OFFICE OF
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS



Van Anda

OFFICE FOR LITTLE, BROWN AND CO., PUBLISHERS
NEW YORK CITY
ROBERT PERRY RODGERS AND ALFRED EASTON POOR, ARCHITECTS



Gottscho

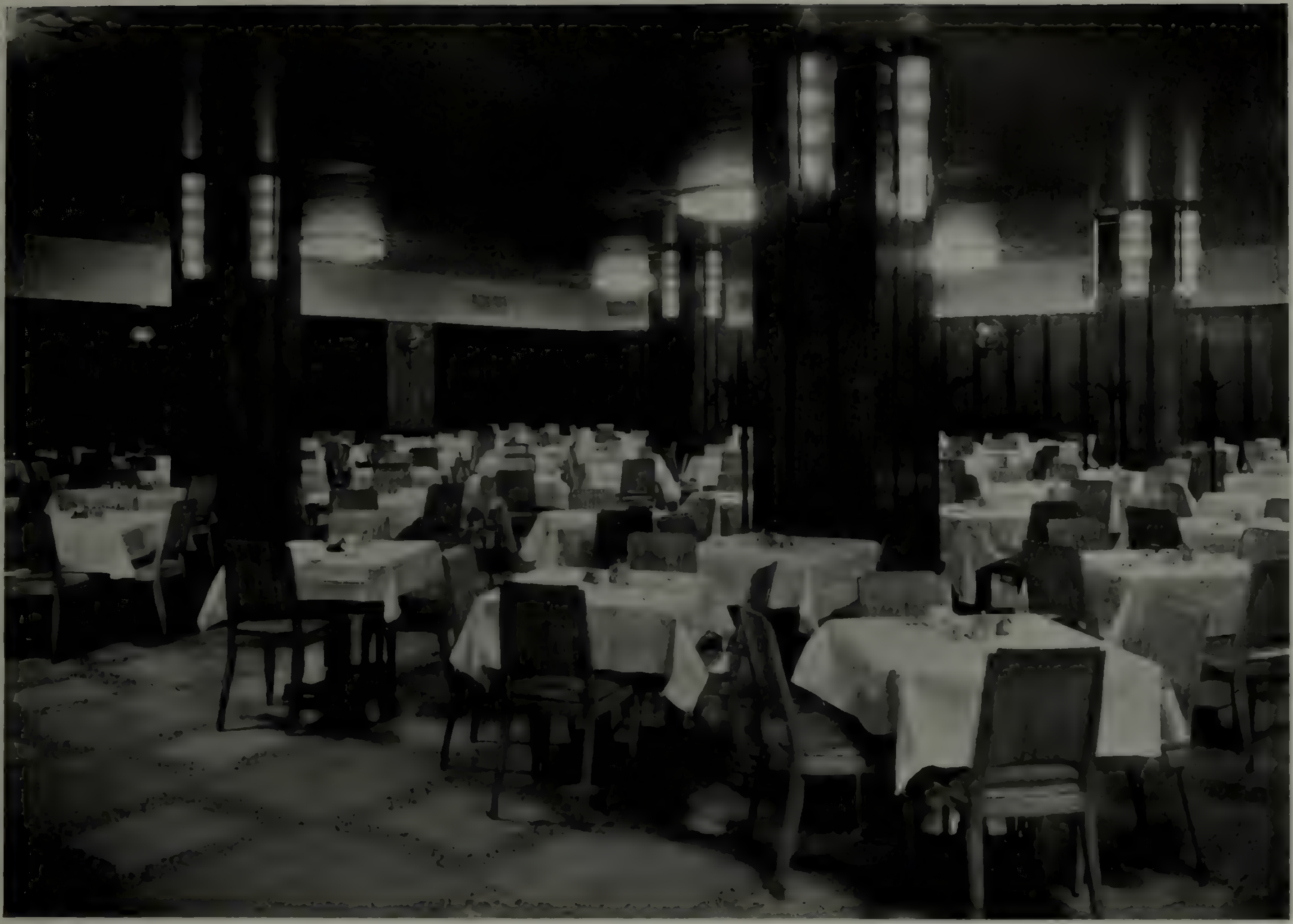
A DRUG STORE THAT OPERATES A RESTAURANT

ELY JACQUES KAHN, ARCHITECT

By Otto Teegen

The Broadmoor Pharmacy, located in the Lefcourt-Colonial Building at 41st Street and Madison Avenue, is essentially a drug store and restaurant. The drug store occupies a portion of the first floor while the entire basement is given over to the grill and tea room, kitchens and pantry. A wide staircase connects the upper floor with the lower and is the only means of communication between the two. Since the area was leased when the building was almost completed, there were many obstacles to be overcome, not only in the disposition of the plan but in the matter of pipes and ducts coming from all parts of the building and centering on the basement ceiling.

The drug store has two entrances, one from the street, the other from the building's main elevator hall. Although actually not of great dimensions, the store gives an impression of spaciousness with a straightforward communication to the main staircase. The walls are paneled to a 14-foot height with Oriental walnut cross-grained in approximately 15″ squares. A 6″ base of Vermont Verde Antique connects the wood paneling with the patterned marble terrazzo floor of Botticino and Cardiff green. The ceiling, with a molded plaster cove, is tinted an ivory cream, and from it are suspended six ceiling fixtures providing ample light even when the soffits of the various fountain reveals and display cases are not lighted. The south wall is perforated with built-in display cases which have sliding glass doors with metal frames; these are lined with mirrors and lighted through frosted glass soffits. All the metal used throughout the interior is chromium-plated with a satin finish. The north and east sides of the store are used for the soda fountain. The counter itself is faced with Oriental walnut and has thirty stationary stools upholstered with leather. A 9″ step at the base of the counter provides a much-to-be-desired comfortable foot rest. The space between the structural columns was used for soda



Gottscho

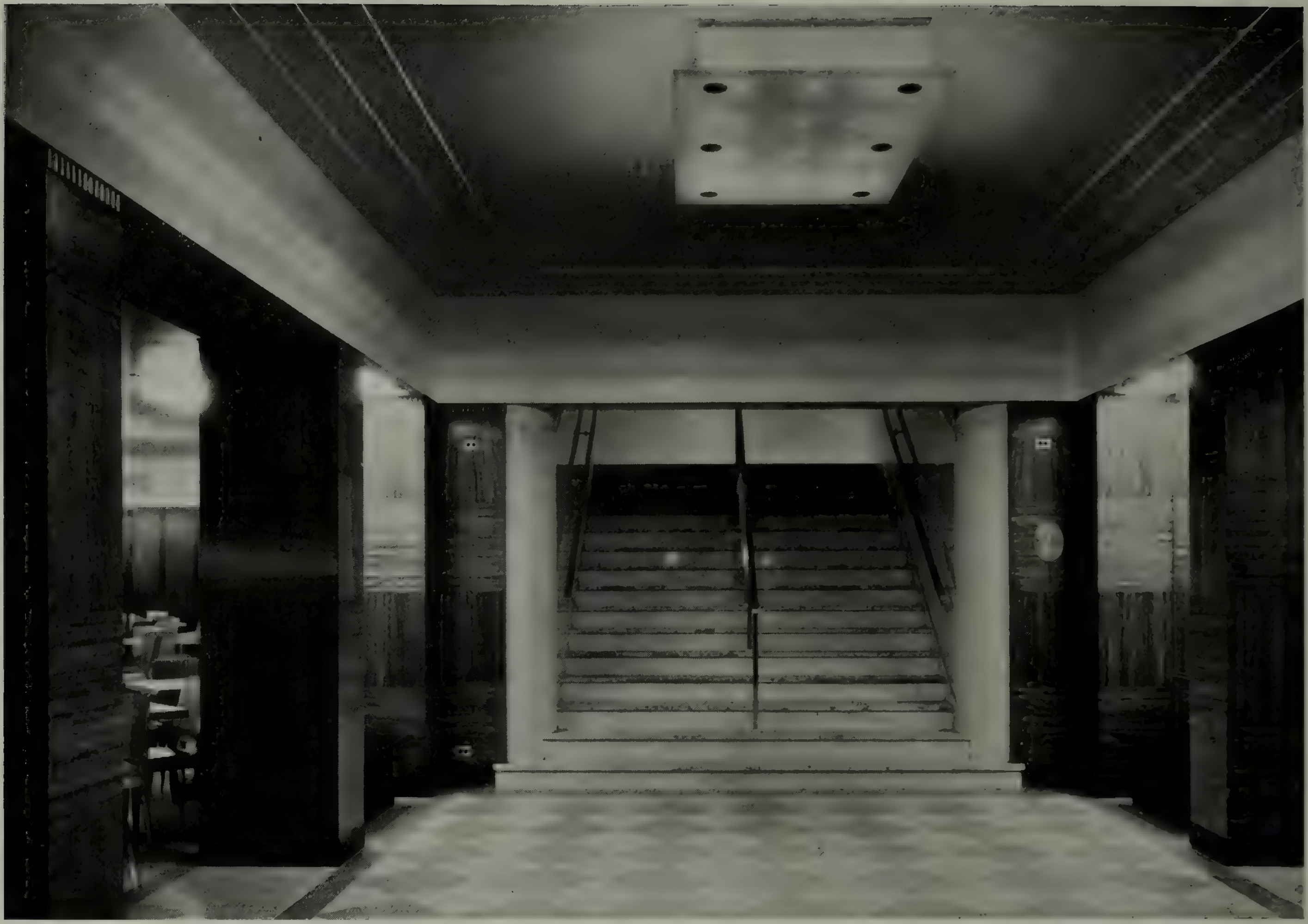
BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Men's grill.

fountain equipment, and the reveals are lined with mirrors and lighted from above through glass soffits. Small metal perforated grilles in the woodwork, placed over each lighted soffit, become decorative features as well as means to ventilate. There is no forced ventilation on the first floor.

The staircase, leading to the restaurant below, is approximately 10 feet wide and faced with Botticino marble; the steps have Botticino risers and Travertine treads. It terminates in the foyer and is on axis with the small waiting room, with walls of plaster painted in three shades of warm sienna and a floor of green terrazzo in pattern. The foyer is paneled in Oriental walnut, the ceiling is of plaster and has a central lighting fixture, and the floor is of terrazzo laid up in alternate squares of Levanto and yellow Verona. Two recesses on each side of its length have mirror backs and are lighted through glass soffits. From the foyer one passes directly to the grill and tea rooms.

The main portion of the grill room is about 60 feet square and built around the four central columns. The ceiling height of this portion is 12 feet, and in the molded plaster frieze below it are placed the ventilating louvres. Because of ducts and pipes, the rest of the room was brought down to a 9-foot height or the total height of the woodwork. The lower part of this has a 3-foot rosewood base and chair rail, while the upper part is of American walnut with 4″ rosewood strips. The four center columns are of American walnut with 2″ vertical rosewood strips terminating in lighting fixtures. On the plaster ceiling are other fixtures with painted border decorations, while some light is provided by wall brackets. All these fixtures, made by Walter Kantack, are of lacquered brass and particularly interesting because no castings, but only standard rolled sections, were used in their manufacture. The floor is of terrazzo laid in pattern, and the marble base adjoining it is of Vermont Verde Antique. This



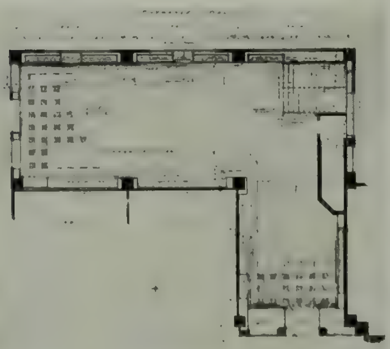
Gottscho

BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

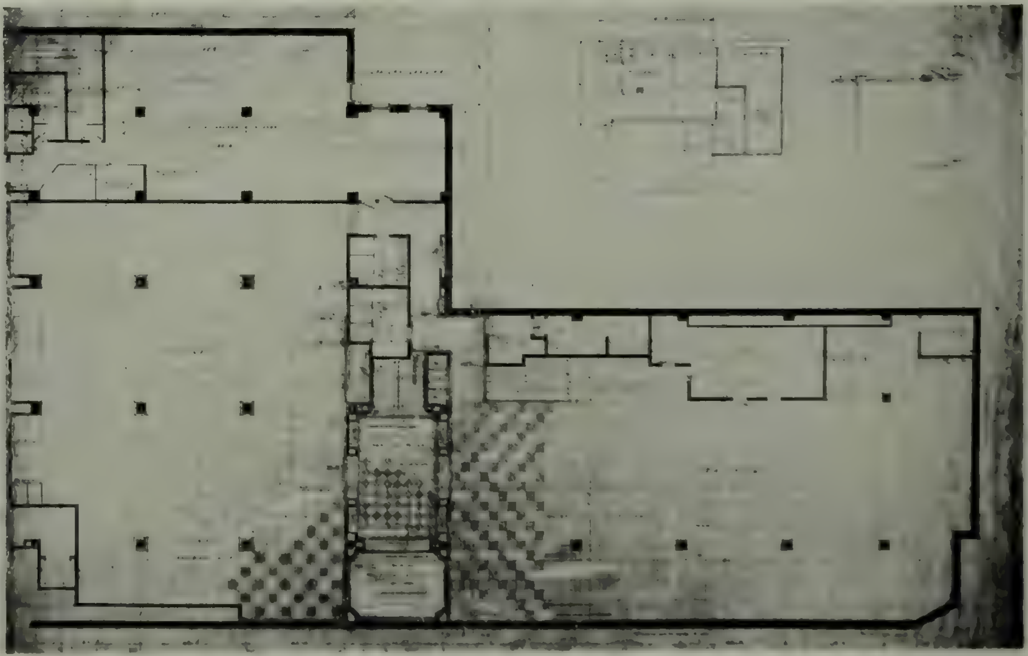
Stair foyer with view of men's grill to left.

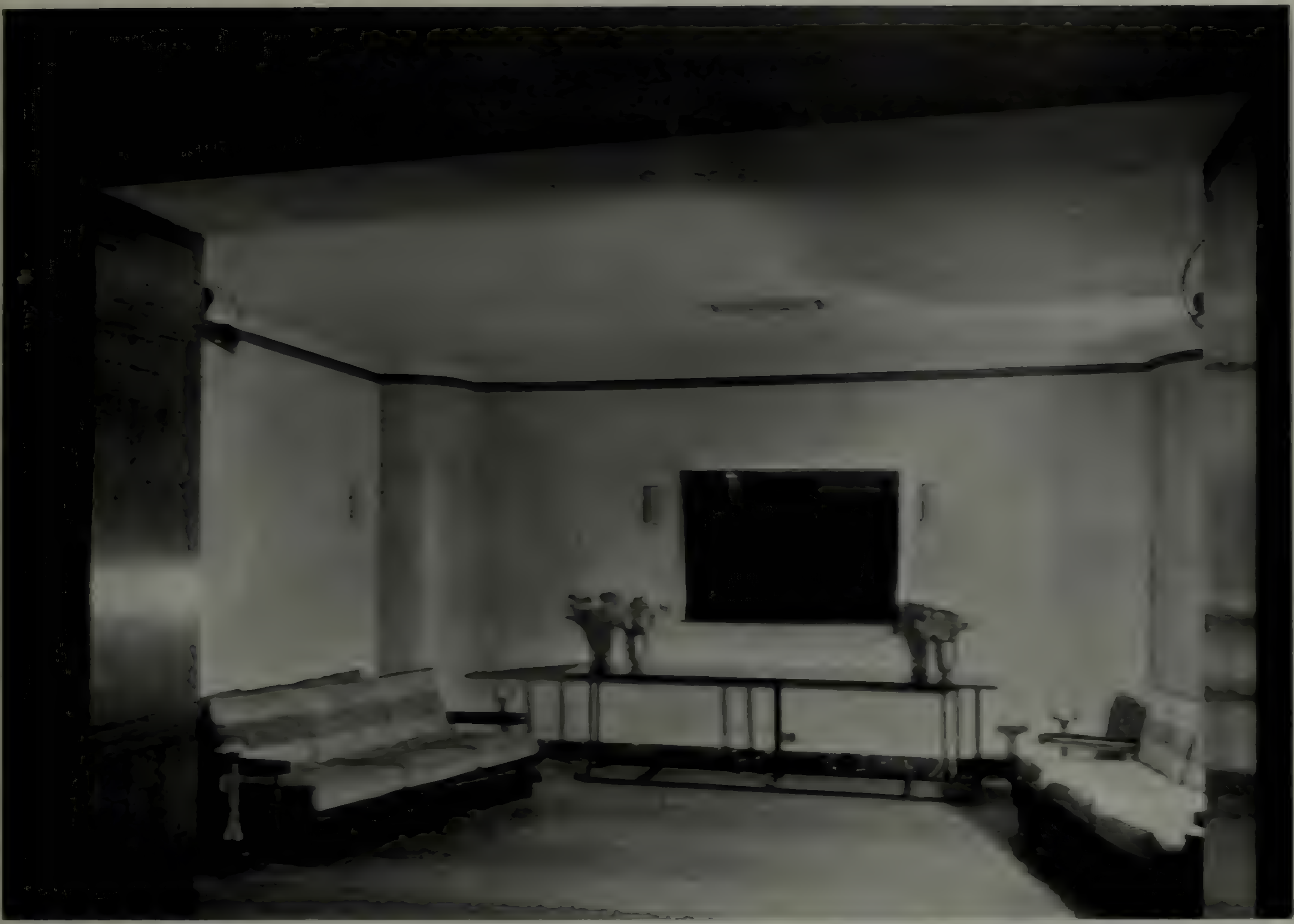
Basement plan: kitchen, men's grill, tea room, waiting room and stair foyer. ➡

Ground floor plan: pharmacy and stairs. ⬇



Both plans in same scale.





Gottscho

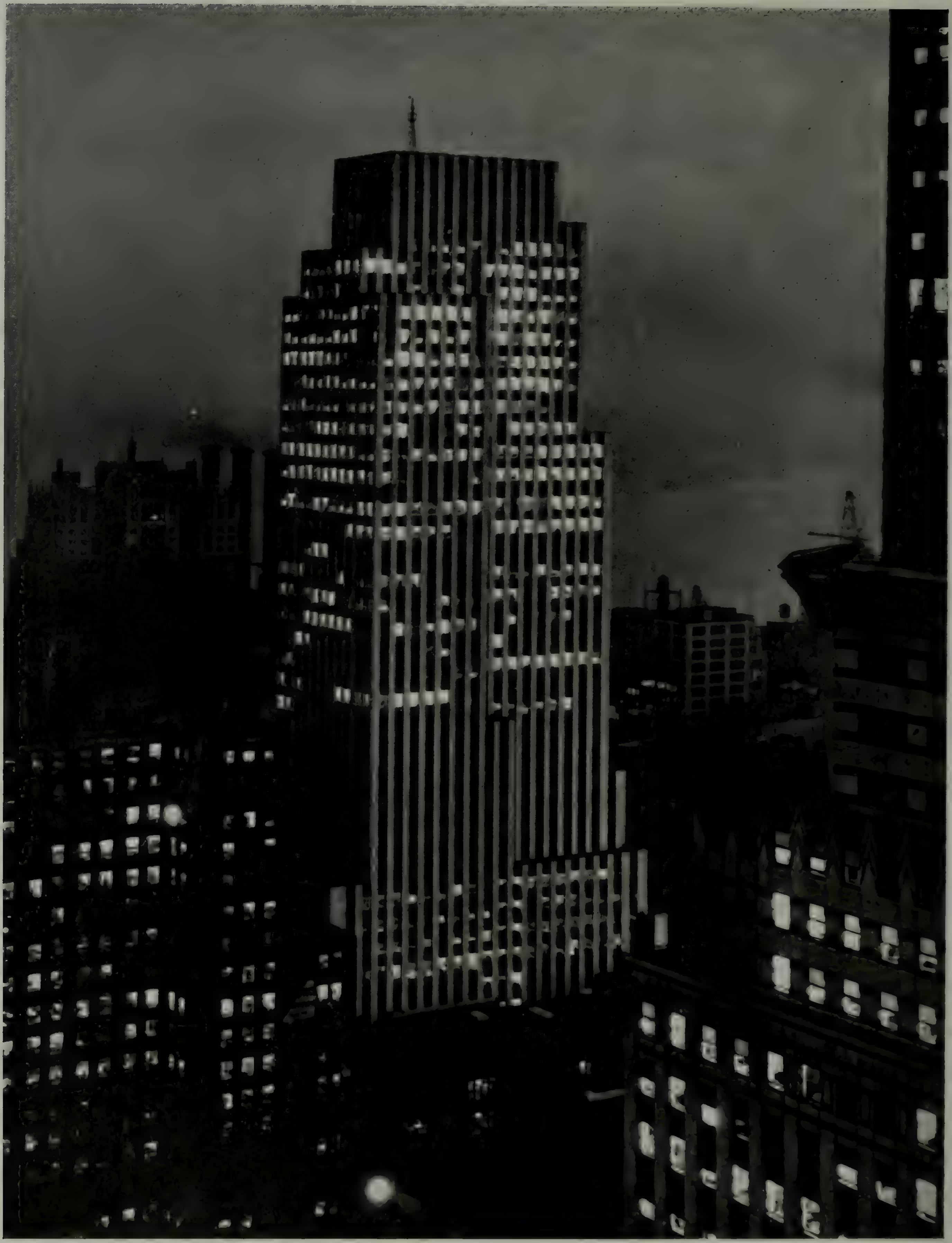
BROADMOOR PHARMACY AND RESTAURANT
NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT

Waiting room opposite stairs and between men's grill and tea room.

room at present seats 400. Both the chairs and tables are of a simple design, the wood being colored light yellow and the Fabricoid upholstery of the chairs vermilion.

The tea room is very light and gay. Except for the chair rail, small ceiling cornice and the soda fountain front, no wood was used. The five free standing structural columns were faced with mirrors down to the chair rail, and on the walls, at intervals, other large mirrors were placed. The spaces between these mirrors are of plaster and have received treatment in color by Putnam Brinley. On either side of each wall mirror are lighting brackets, while from the plaster ceiling are suspended lighting fixtures, the metal parts of which are lacquered in green and black; an etched glass bottom allows some direct light although the lighting of the room on the whole is indirect. The furniture in this room is of the same color and material as that used in the grill with the exception of the tables which have a vermilion top covered by a sheet of glass. The floor is of green and black terrazzo laid in pattern. Service for this room, at present with a capacity of 400 chairs, is provided by the kitchen and augmented by a pantry located on the south side adjoining a long soda fountain which seats 16. The communication to and from the pantry and kitchen is direct and efficient. A back staircase, leading from the room to the main lobby upstairs, has been provided, but it is little used inasmuch as the main staircase is adequate and more convenient.

Although the area of the kitchen and pantry may seem on plan rather confined, its equipment has been so arranged that it is entirely adequate to provide the 1,500 patrons who crowd the grill and tea room each noon. In conjunction with it are store and refrigerator rooms and the help's locker rooms. Only women are used in the kitchen. At the moment there are thirty of these, sixty-eight waitresses, and twelve fountain men, besides various hostesses and cashiers.



Galloway

Rooms expand on the same floor level and require windows arranged horizontally. This principle is clearly illustrated by the night lighting of the Daily News Building, New York City. The normal horizontal movement is interrupted by vertical bands which are unnecessary with steel construction.
John Mead Howells and Raymond Hood, Architects.

WINDOWS

By A. LAWRENCE KOCHER and ALBERT FREY

Good architecture is not dependent upon window shapes. Windows should be given sizes and proportions that are suitable to daylighting needs.

The primary purpose of windows is to provide daylight and ventilation to building interiors. Windows should also permit unobstructed view of surroundings. To aid requirements of view the glazed area should be without division bars unless structurally necessary.

Physicians and illumination engineers have consistently called attention to the value of daylight, particularly of sunlight, but "how it really acts and how its benefits can most practically be secured we are just beginning to comprehend."* The Metropolitan Life Insurance Company in its Statistical Bulletin has made a tabulation of data regarding deaths found in a random selection of records of the 40,000,000 risks which it has carried . . . "and found that death rates are higher during the darker winter months than at any other time of the year and that the low death rates are found during the summer months." §

Windows should be designed to make usable a maximum of floor space with evenly distributed daylight. Light needs are the basis for determining window sizes and their placement. These needs can be determined by the use to which floor space is put. Thoughtful investigation by the architect with advice of technical illumination experts is essential. It is obvious, as an example, that the laboratory where microscopic work is carried on requires more light than the room for library book storage, where light is injurious to bindings. Light for general office work requires approximately ten foot candles† of intensity at a desk level, thirty inches above the floor. We are informed by experience tests that our "seeing improves with increase in illumination. Speed of vision and accuracy of sight increases. Ocular fatigue decreases."‡

One of the most astonishing discoveries of lighting experts is the fact that the room flooded with daylight from an entire wall of glass is more satisfactory for working and less disturbing to the eye than the room with light from a single moderate size window. In other words, the greater the glass area the more favorable the working conditions will be. This phenomenon is checked by daily experience. There is no significant eye strain in reading on a porch that is open on three sides but there is eye strain in typing or reading in a room with light from a single window that is surrounded by dark wall areas. It is essential, therefore, to seek daylight intensity that is evenly distributed, without excessively bright or dark spots. Lighting engineers offer the rule, "The brighest spot in any building should not have more than about three times the illumination of the dimmest spot in the same building."

With the increase of glazed area to a maximum, there arises the acute problem of heat loss in winter and the need to exclude the intense heat rays of summer. There is no serious difficulty in adjusting the heat to a comfortable temperature in winter by an increase in radiation. Heating has been satisfactorily solved for hospitals, greenhouses and industrial buildings.

There are more serious difficulties in the control of summer heat. Window shades with polished metal blades could be used to deflect the sun's rays and at the same time to admit some light. Awnings or shades are also effective. Ventilation by natural or artificial methods would produce the circulation needed to lower room temperature.

CHECKING LIST

Size and shape determined by daylighting needs.
Should make usable a maximum of floor space.
Minimum obstruction by framework and muntins.
Greater glass area at base of buildings than for upper stories.
Window area should be at least 30 per cent of floor area.
Room depth should not exceed twice the window height for most satisfactory working conditions.
Glass area should continue to ceiling.
Adaptability to control of light by shades.
Provision for heat control in summer.
Ease of operation.
Convenient possibilities for cleaning.
Provision for ventilation when artificial ventilation is not supplied.
Non-interference with screening when opening windows.
Freedom from air leakage.
Glass free from distortion.
Double strength glass for areas in excess of three square feet and for all glazing of printing plants and manufacturing buildings.
Plate glass for sizes in excess of 12 square feet.
Small glass sizes for factories on account of frequent replacement.

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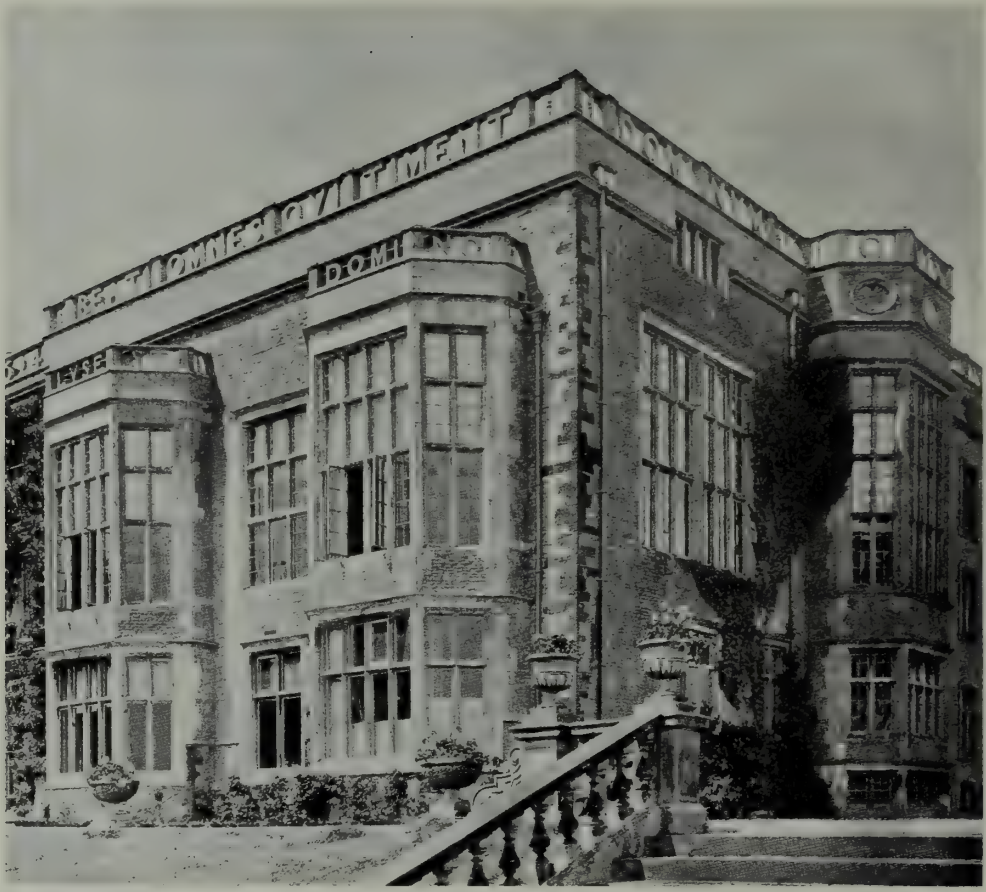
* Proceedings of the American Society of Civil Engineers, May, 1925, pp. 800–802.

§ Regional-Survey of New York and its Environs, vol. VII, p. 152.

† Foot candle is a measure of light quantity thrown by a standard candle on a foot square surface, one foot from candle.

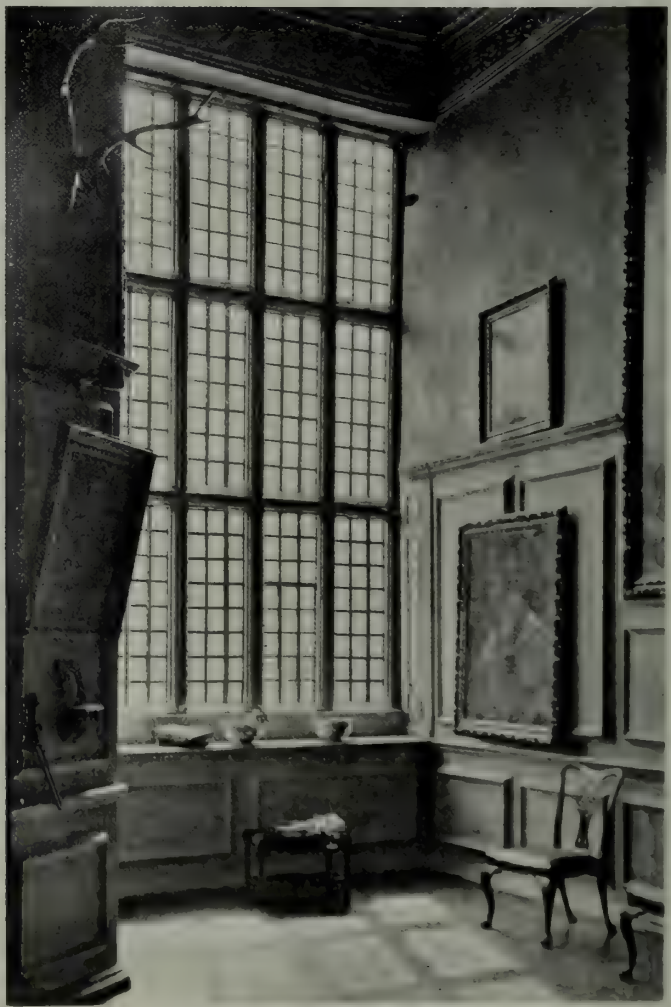
‡ Industrial Daylighting, p. 5.



English Homes, by H. Avray Tipping, vol. II

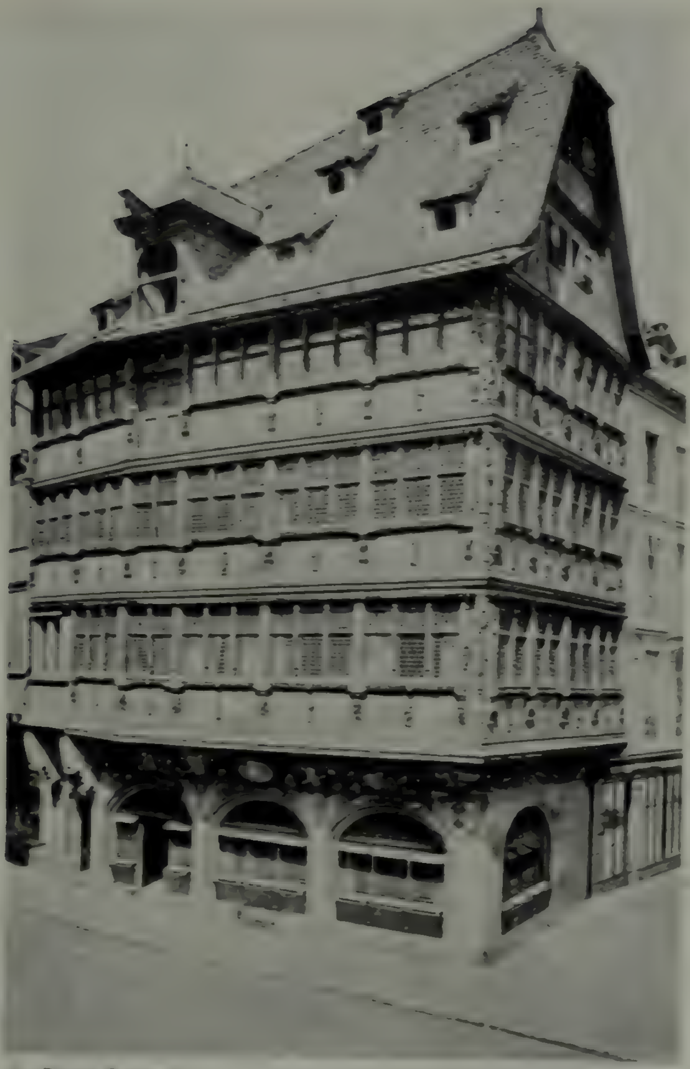
← Castle Ashby, Northamptonshire, England.

Interior, Oriel Hall, Nettlecombe Court, Somerset. ↓



English Homes

Windows characteristic of England and northern Europe are of generous size suited to purpose and to their time. They were created so as to flood interiors with ample daylight in a region of low light intensity. Window mullions were reduced to a minimum to increase glass area.



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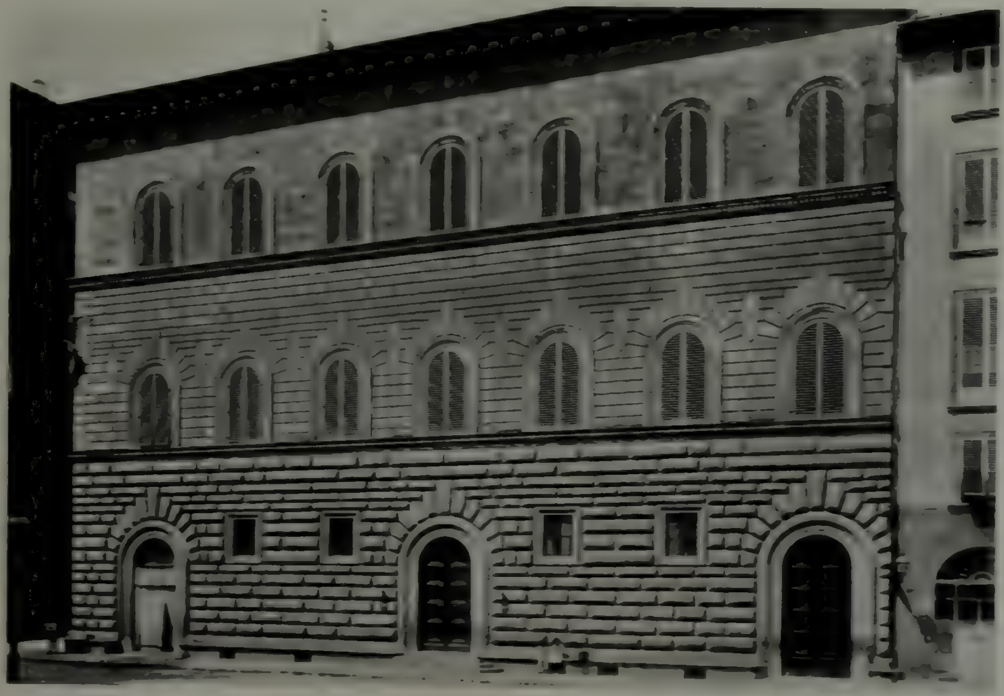
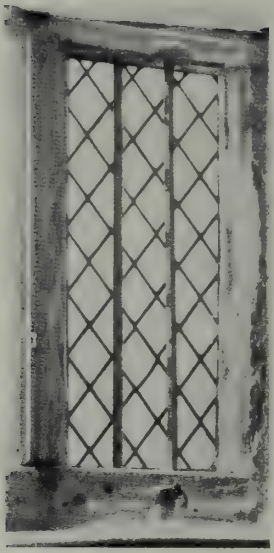
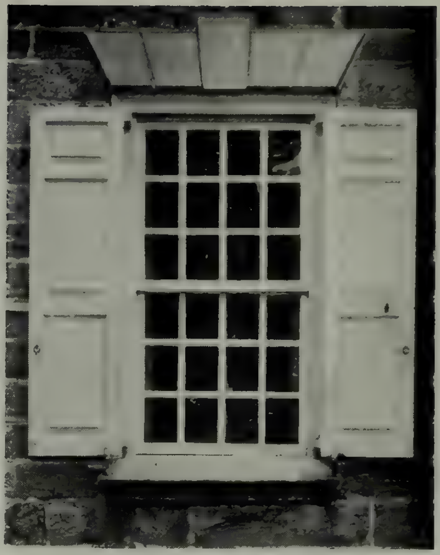
A typical multi-storied building with continuous windows on each floor. A method of daylighting that is efficient and that conforms to the levels for work and living. The House Kammerzell, Strassburg.

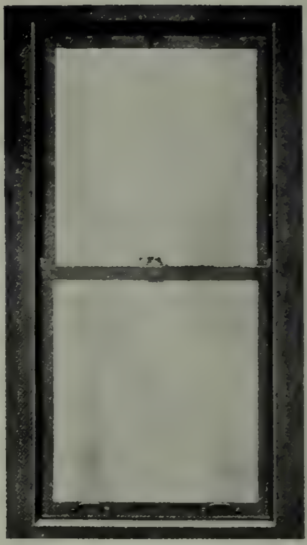


Windows typical for Italy, a country with ample sunlight, were limited in size and widely spaced so as to exclude the too intense light and heat. The small window sizes, however, were sufficient for daylighting rooms. Palazzo Gondi, Florence.



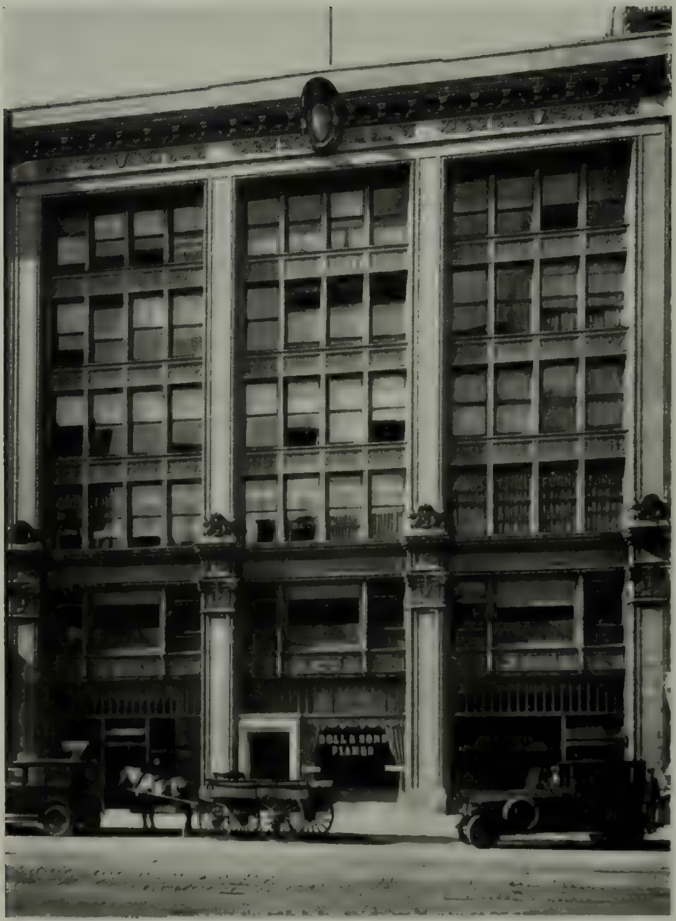
English Homes



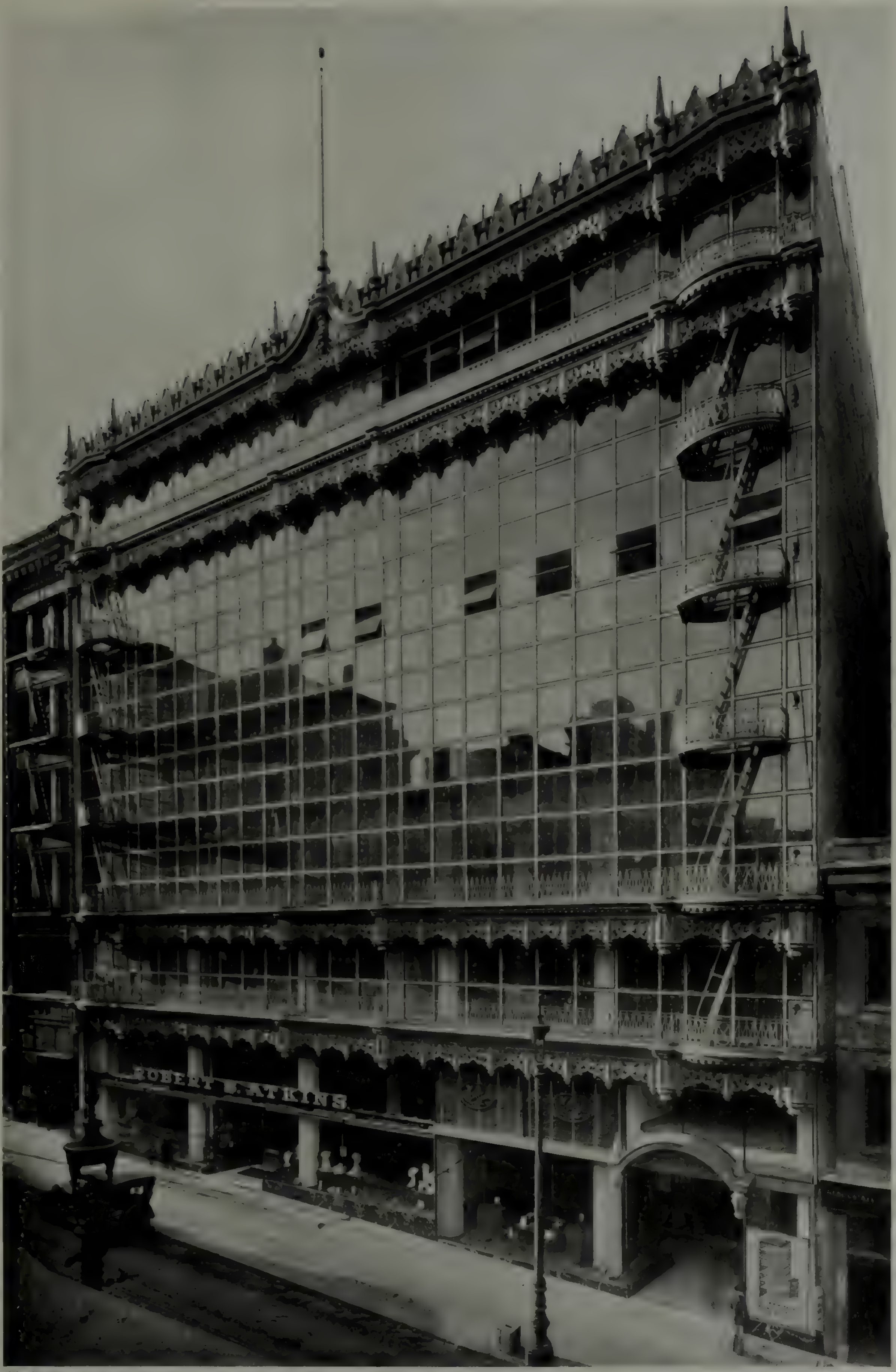


Window divisions of the historic periods were determined by manufactured sizes. They never had esthetic purpose. The windows of the older English cottages and colonial dwellings are attractive, not because of the small glass divisions but because of a general harmony which resulted from a logical and non-imitative design.

The large sheets of glass produced by present day methods should be used for window display, offices, schools and residences, both for economy and good lighting. Framework and muntin bars should be of minimum width.

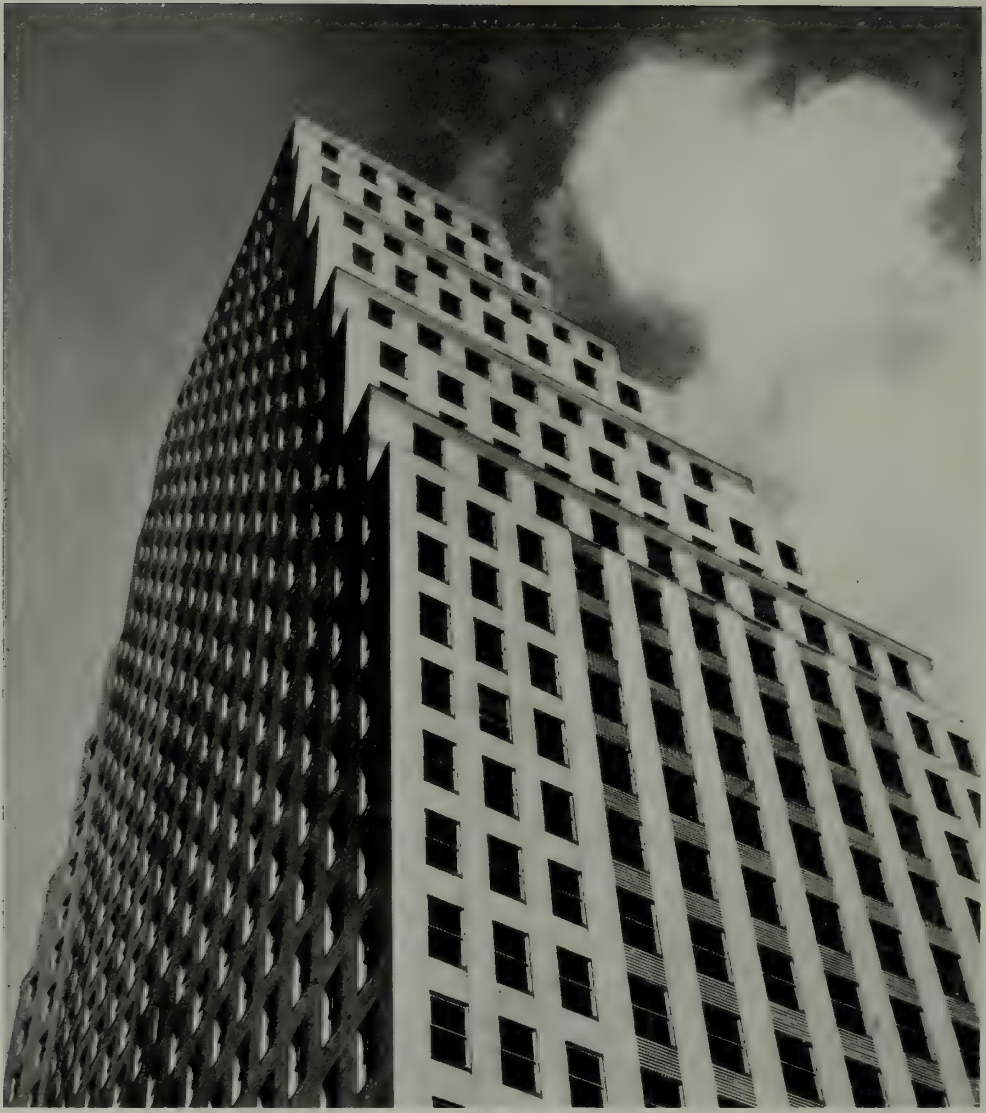


Maximum of glazed area with a minimized classical enframement. This could not be accepted as the best solution because decorative details applied to the surface of the building add to cost without increase in convenience. Building for Doll and Sons, New York City, 1920. Alfred Bossom, architect.



Moulin

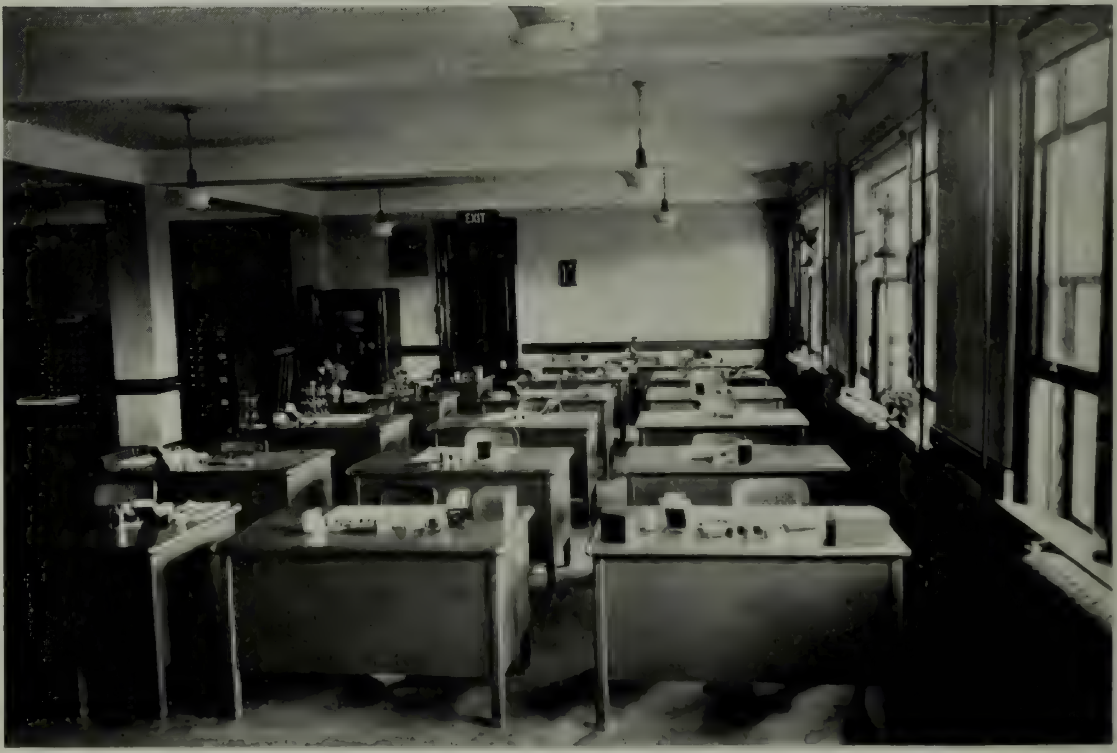
Completely glazed wall which determines the character of the building and its use for display and sale of wearing apparel. The Gothic trimmings do not contribute to such a purpose. It is however a more satisfactory solution for interior daylighting than later examples with heavy wall construction and widely spaced windows. Hallidie Building, San Francisco, (1918). Willis Polk and Company, architects.



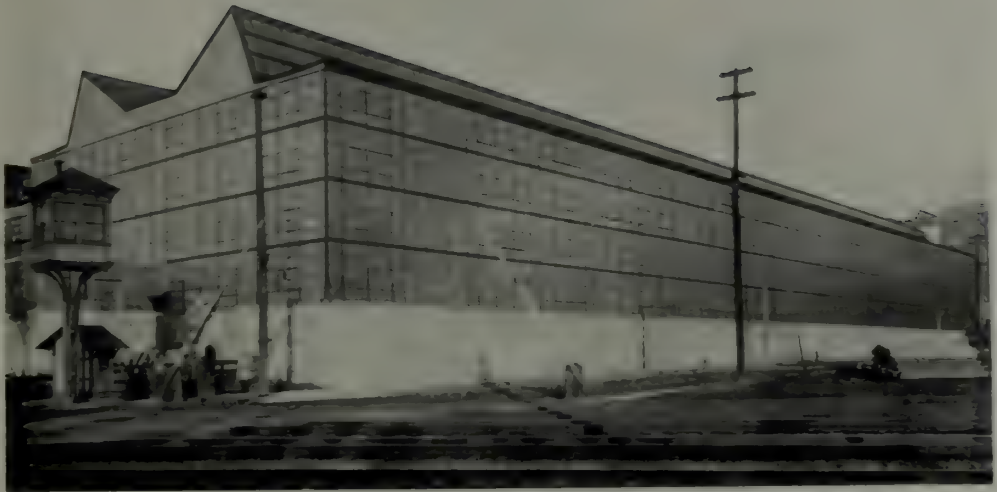
Galloway

The gridiron window pattern was evolved from Renaissance architecture which had a spaced fenestration because of limited light requirements. This arrangement, while attractive, suggests supporting wall construction (walls are actually supported by the steel framework). 120 Wall Street, New York City.

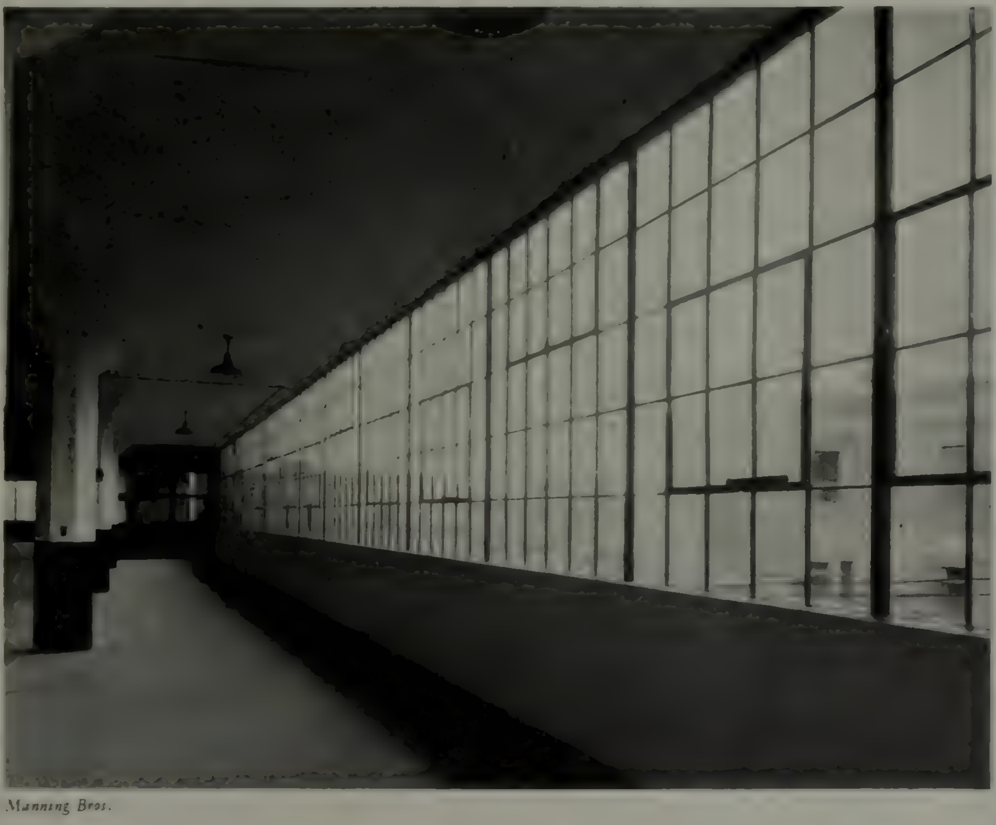
Ely Jacques Kahn, architect.



Interior of an office which illustrates darkened walls and limited light with the spaced window scheme. Note decrease in daylighting with distance from exterior windows. See pages 135, 136 for analysis of effective lighting.

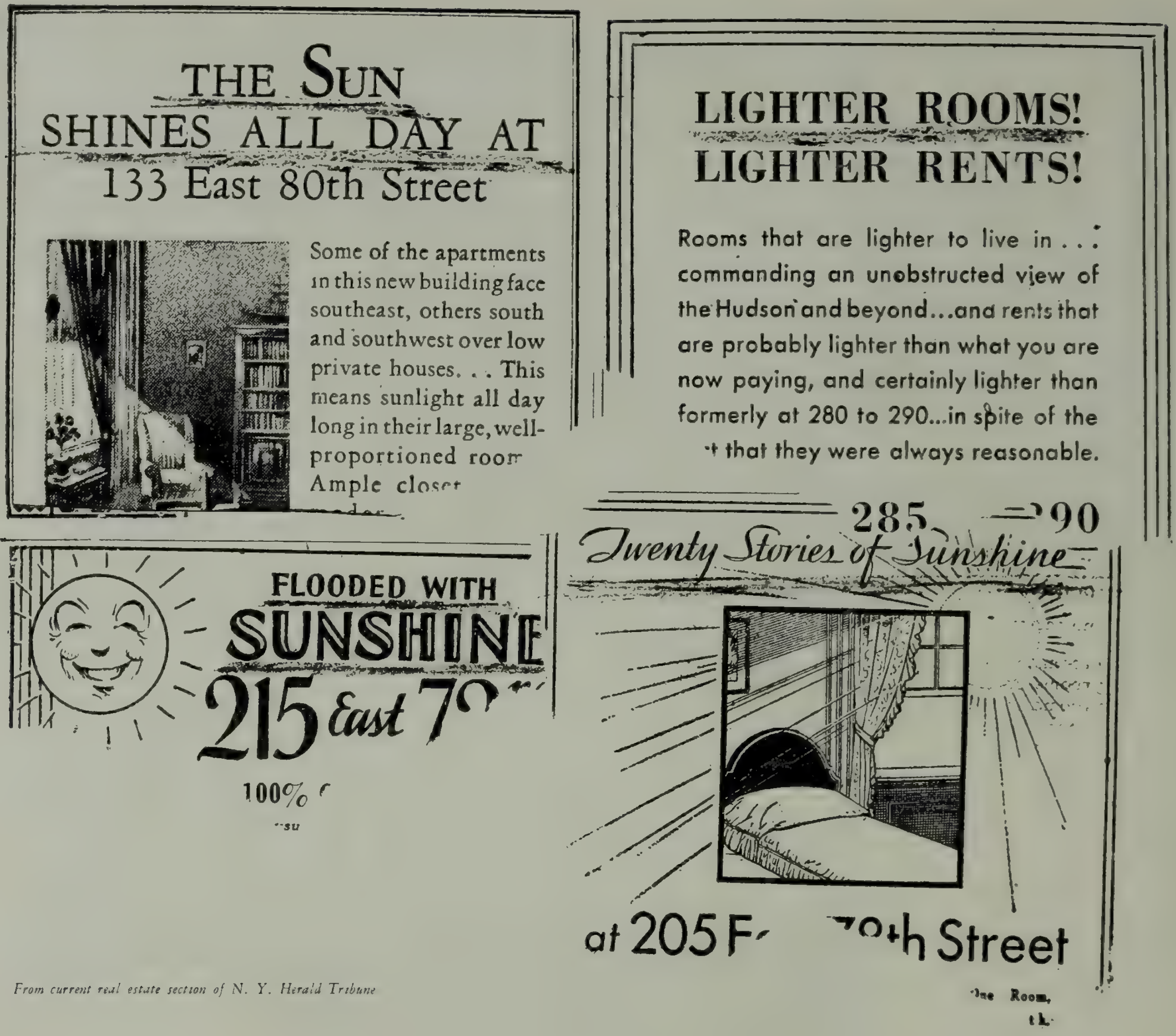


The factory, generally speaking, has been free from architectural or stylistic restrictions. In order to obtain well lighted working space, exterior walls have become literally "walls of glass." There are more favorable light conditions in many factories than in office buildings and apartment houses.



Manning Bros.

A maximum of daylight is obtained with the continuous window. This is made possible with cantilever floor construction. Graham Paige Service Building, Detroit, Mich.



THE SUN
SHINES ALL DAY AT
133 East 80th Street

Some of the apartments in this new building face southeast, others south and southwest over low private houses. . . This means sunlight all day long in their large, well-proportioned roo
Ample clos

LIGHTER ROOMS!
LIGHTER RENTS!

Rooms that are lighter to live in . . . commanding an unobstructed view of the Hudson and beyond...and rents that are probably lighter than what you are now paying, and certainly lighter than formerly at 280 to 290...in spite of the
t that they were always reasonable.

FLOODED WITH
SUNSHINE
215 East 7
100%

285 90
Twenty Stories of Sunshine
at 205 E h Street

From current real estate section of N. Y. Herald Tribune

Sunshine featured in renting apartments. The public wants light and sunshine, otherwise realtors would not stress it. Tenants pay more for apartments or offices that have much light. Rooms with small windows and light that is unfavorable for work rent with difficulty. Architects should be guided by such demands.

"The more daylight you have inside a building, the better, if it is evenly distributed. No maximum limit for good seeing has yet been found."

"For the reason just given, it is perfectly safe to design for as much light as possible. Be sure you get enough light. Don't worry about getting too much."*

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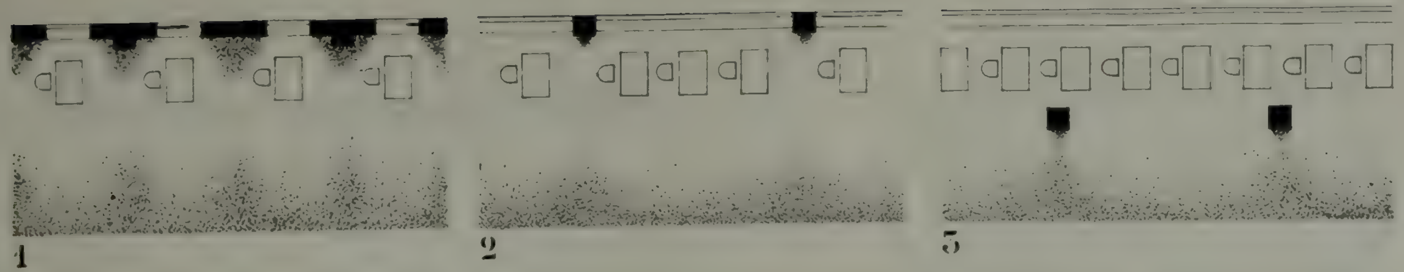
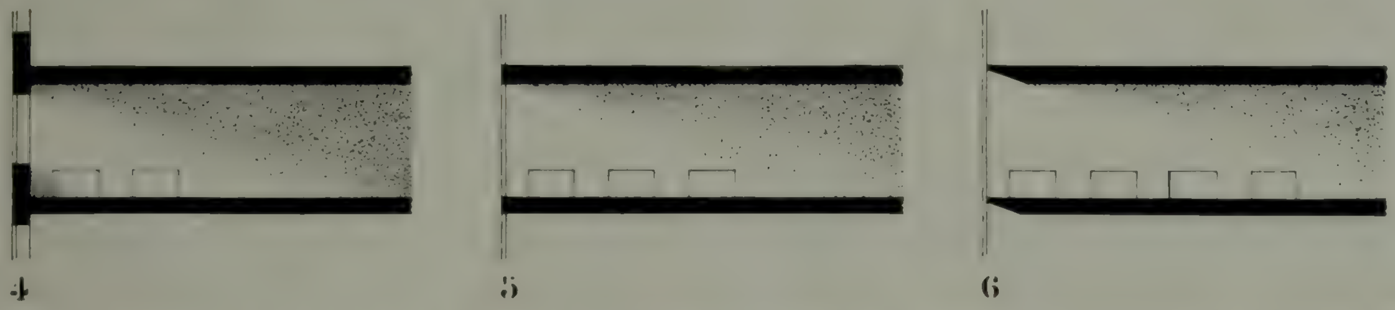
* Industrial Daylighting, p. 6.



Plans with actual and suggested methods for daylighting office space. (1) Typical arrangement with moderate size windows. (2) Exterior wall reduced to supporting columns with increase of adequately lighted area. (3) Maximum lighted area with columns set back from outer wall with cantilever floor construction.



Sections showing depth to which adequate daylight is transmitted. (4) Windows of limited height (typical). (5) Glazed area from floor to ceiling. (6) Depth of well lighted working space increased by tapering ends of cantilever floor construction.

Effective lighting for clerical work in an office requires ten foot candles of light intensity at desk height. "Ten foot candles is more light than formerly was considered necessary but experience shows that seeing improves with increase in illumination. Speed of vision and accuracy of sight increase. Ocular fatigue decreases."*

"The daylighting on a horizontal plane outdoors, at noon, on a clear day in June sometimes is as much as 10,000 f. c. but it does not harm the normal eye because the eye adjusts itself to such intensities. . . . No such intensities can be secured inside a building."†

The office, schoolrooms or apartment would be efficiently lighted if the window area is at least 30% of the floor area.

Contrasts of light and dark areas in any building should be so adjusted that the brighest light should not exceed three times the illumination of the dimmest area in the same room.

The most favorable place for reading or work is on a covered porch completely open on three sides.

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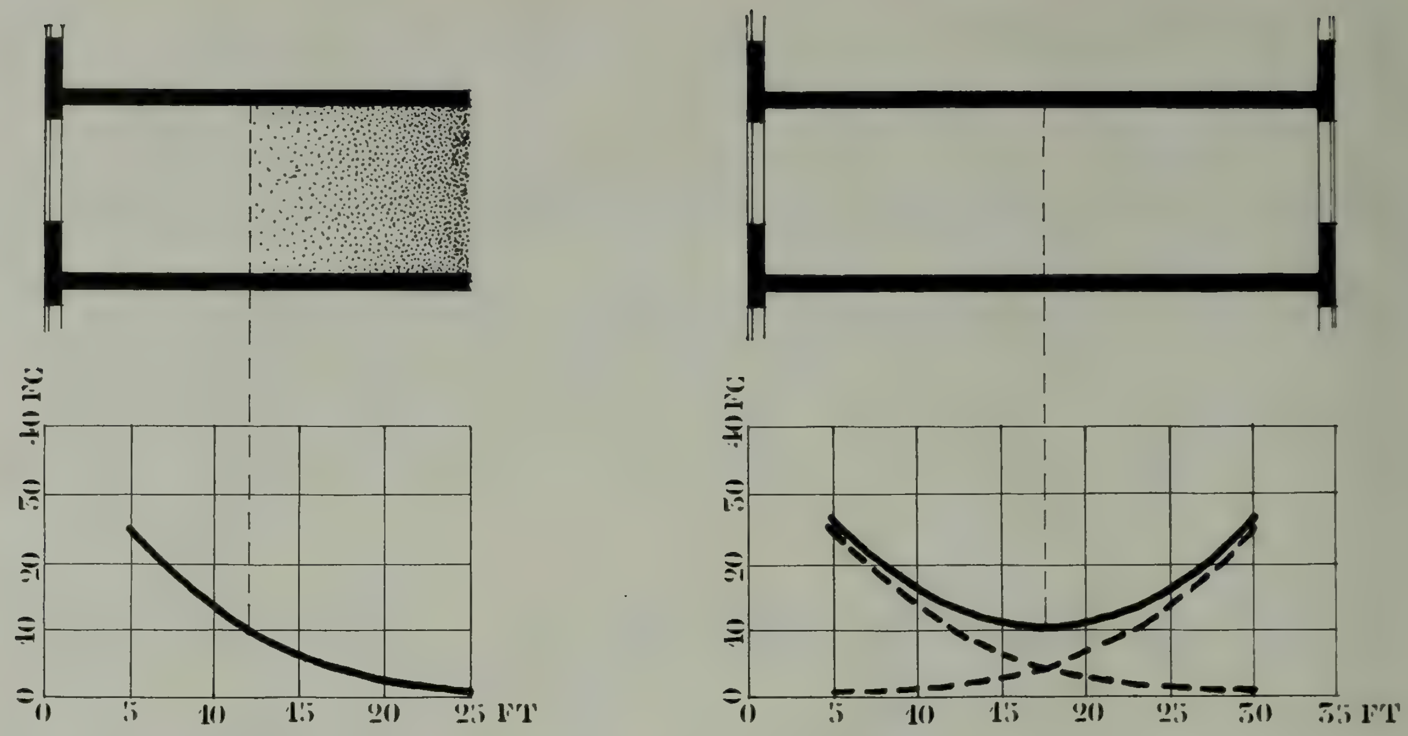
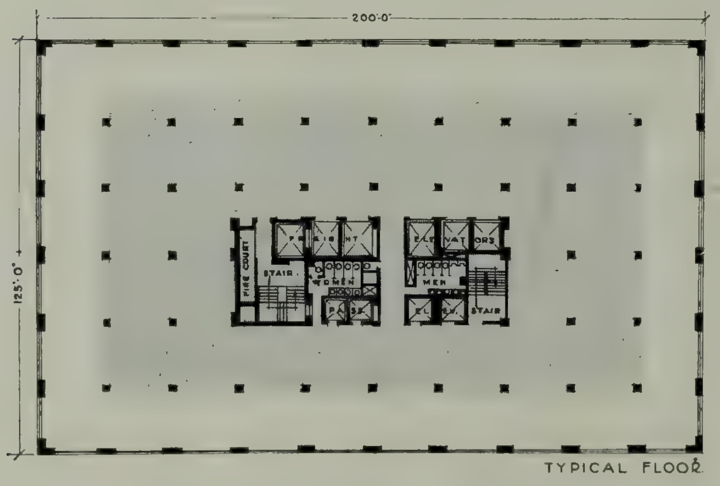
* Industrial Daylighting, p. 5.
† Ibid p. 6.



SECTIONS WITH DIAGRAMS SHOWING HOW MUCH LIGHT IS ADMITTED BY WINDOWS.

A vertical window admits satisfactory daylight into room interiors approximately twice the window height.

A room that is lighted from two opposite sides has adequate daylight that extends from each side a distance of three times the window height.



Typical floor plan of loft building showing adequate daylight area and shaded part that requires artificial illumination during most working hours.

HOW MUCH DAYLIGHT IS REQUIRED?

	Minimum f. c. 15 years ago	Minimum f. c. 8 years ago	Minimum f. c. today
(1) Aisles, elevators, storage	0.5 to 1	3 to 6	**5 plus**
(2) Churches, Auditoriums	1 to 3	2 to 4	**3 to 8**
(3) Department stores	3 to 7	7 to 10	**10 plus**
(4) Show windows	5 to 40	10 to 70	**15 up**
(5) Rough manufacturing	2 to 4	3 to 6	**6 plus**
(6) **Clerical work**	3 to 8	5 to 12	**10 plus**
(7) Fine manufacturing	4 to 8	6 to 12	**10 plus**
(8) **General drafting room work**	5 to 10	10 to 15	**15 plus**

From Industrial Daylighting, p. 5.

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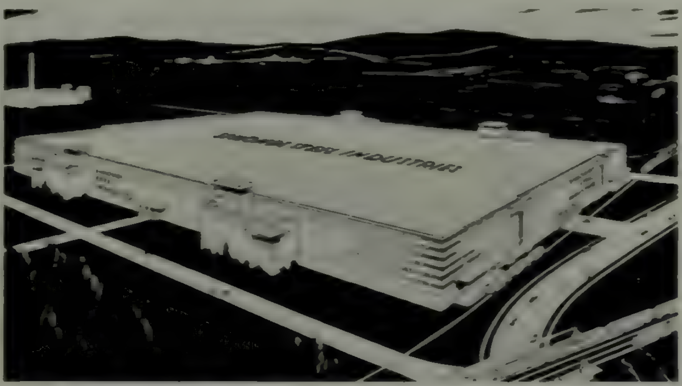
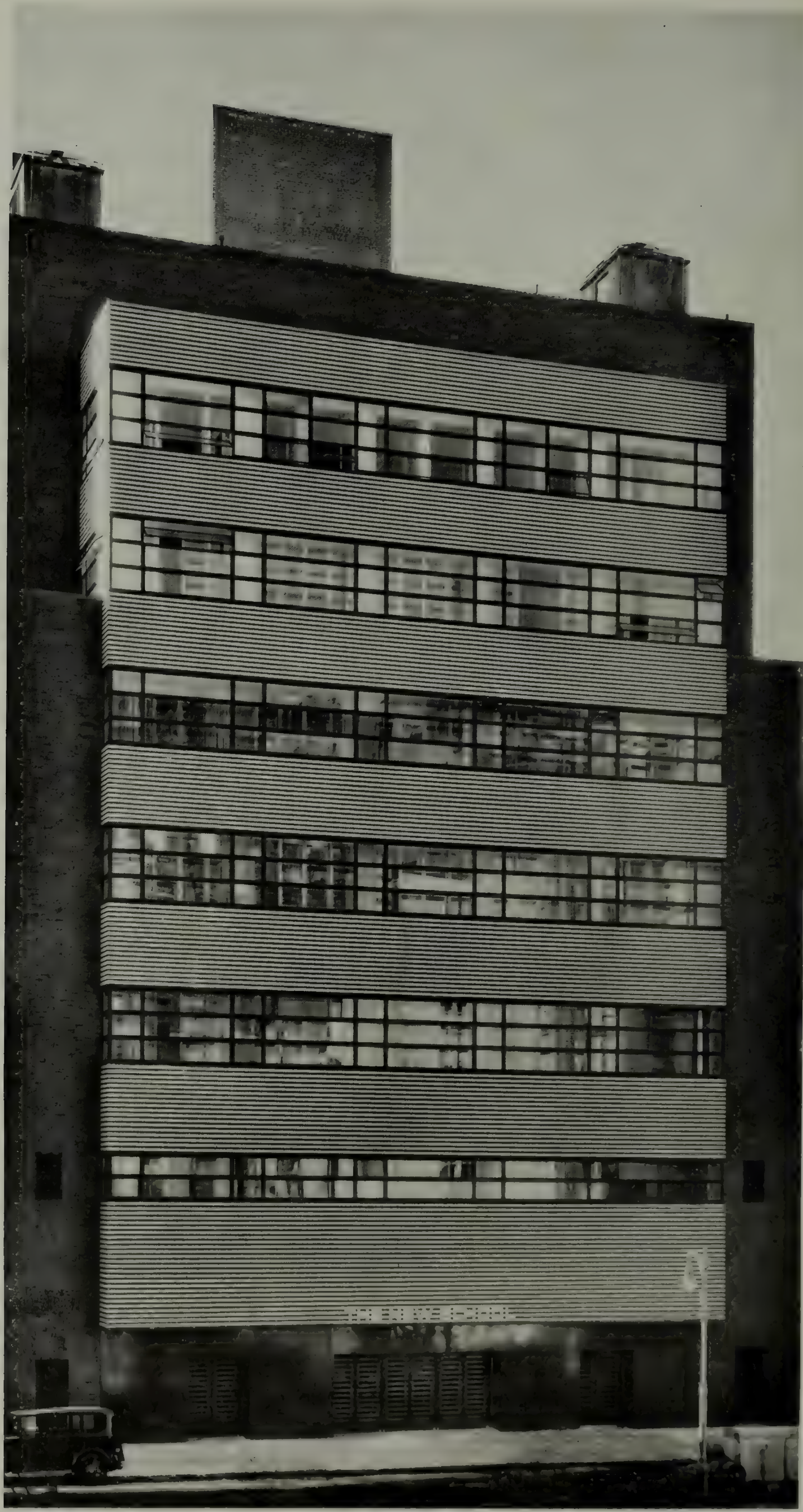


Windowless Building now under construction for the Simonds Saw and Steel Company, Fitchburg, Mass. The Austin Company, Engineers and Builders. An attempt to attain lighting by artificial methods with intensities that do not vary. Mechanical ventilation is provided. It remains to be proved that the artificial atmosphere and lighting are equal in all respects to natural methods.

THE NEW SCHOOL FOR SOCIAL RESEARCH

NEW YORK CITY
JOSEPH URBAN, ARCHITECT



Nyholm and Lincoln

Elevation. Solid masses, mat black brick. Window spandrels, mat black and pale buff brick. Veneering round doors, Coopersberg black granite. Window frames, rolled steel painted black. Interior window frames and column surfaces generally carry the color of the rooms: sixth floor, white; fifth, yellow; fourth, dark blue; third, orange; at right, gray and blue; second, maroon; at right, gray-blue and deep blue; mezzanine, light orange.

THE NEW SCHOOL FOR SOCIAL RESEARCH

JOSEPH URBAN, ARCHITECT

J. H. TAYLOR, CONTRACTOR

By Shepard Vogelgesang

Plot dimensions: 103′ 3″ x 77′ 7¼″.
Height of building: 7 floors and basement.
Total cubage: 803,000 cu. ft.
Complete cubage costs including fixtures, decorations and furnishings, exclusive of two mural paintings: 65c per cu. ft.
Total cost, exclusive of land price: $500,000.

•

The New School was founded on the perception of the demand for adult mental occupation and expansion in an age which, among the machine products, has been rapidly fabricating leisure. The client, Dr. Alvin Johnson, is an educator of broad information and liberal ideas. His experiment was to give opportunity for following many interests in this leisure time. It met with a degree of success which demanded more ample housing. What he wanted of his architect was the embodiment of the school requirements—simply, technically and beautifully, within the economic means at hand. There was no question of recalling the past; the building was to function in the present and if possible to forecast the future. To these liberal assets he added the skill and enthusiasm of two outstanding progressive American painters, Thomas Hart Benton and Jose Clemente Orozco. Benton is a New Yorker whose work was well known for vigorous ability but never before adequately incorporated in a building. Orozco is a Mexican with the forcefulness and integrity which New York recognizes in the famous Mexican group but has been reluctant to provide with patronage. During the erection of the building the enthusiasm of the architect, the client and these painters communicated to everyone engaged in the work. Few buildings have opened with an equal air of suspense. Few buildings have ever had so much experiment and intense conviction at stake.

The organization in plan is concentration of the instruction facilities in the basement, ground floor and second floor; third floor—administration; fourth, fifth and seventh—research, exhibition and studio. The vertical circulations, elevators and stairs disperse upward traffic in two channels in parallel stacks on each side near the front of the building. The toilets and kitchens are also in tiers, opening on two sides on light shafts located toward the rear of the building.

For instruction in the dance a circular room with ballet rail is provided in the basement where Dalcroze eurythmics, ballet and round dances can be given. The first floor comprises the main auditorium seating 550 persons, and entrance lobby from each end of which all other floors are accessible by two elevators and stair towers. Above is a mezzanine with two galleries each accommodating 20 additional spectators, a projection room equipped for sound motion pictures and a bookstore. The second floor provides five class rooms, two accommodating 220 and 187 students each on ramped floors which parallel the curve of the auditorium ceiling. Classes are held for the most part in the evening so usual requirements of orientation to natural light were waived in favor of utmost economy in space.

On the administration floor the dome of the auditorium is echoed by the rise in level to the board of directors' room. This room is flanked by general office space and building superintendent's quarters. The central area on this floor is occupied by the reception room where the general public is accommodated. On one side of this room, across the front of the building, are the director's and assistant director's offices, each with a secretary's room, flanking a central office for the school clerk. On the opposite side of the room, across the back of the building, is the board of directors' room.

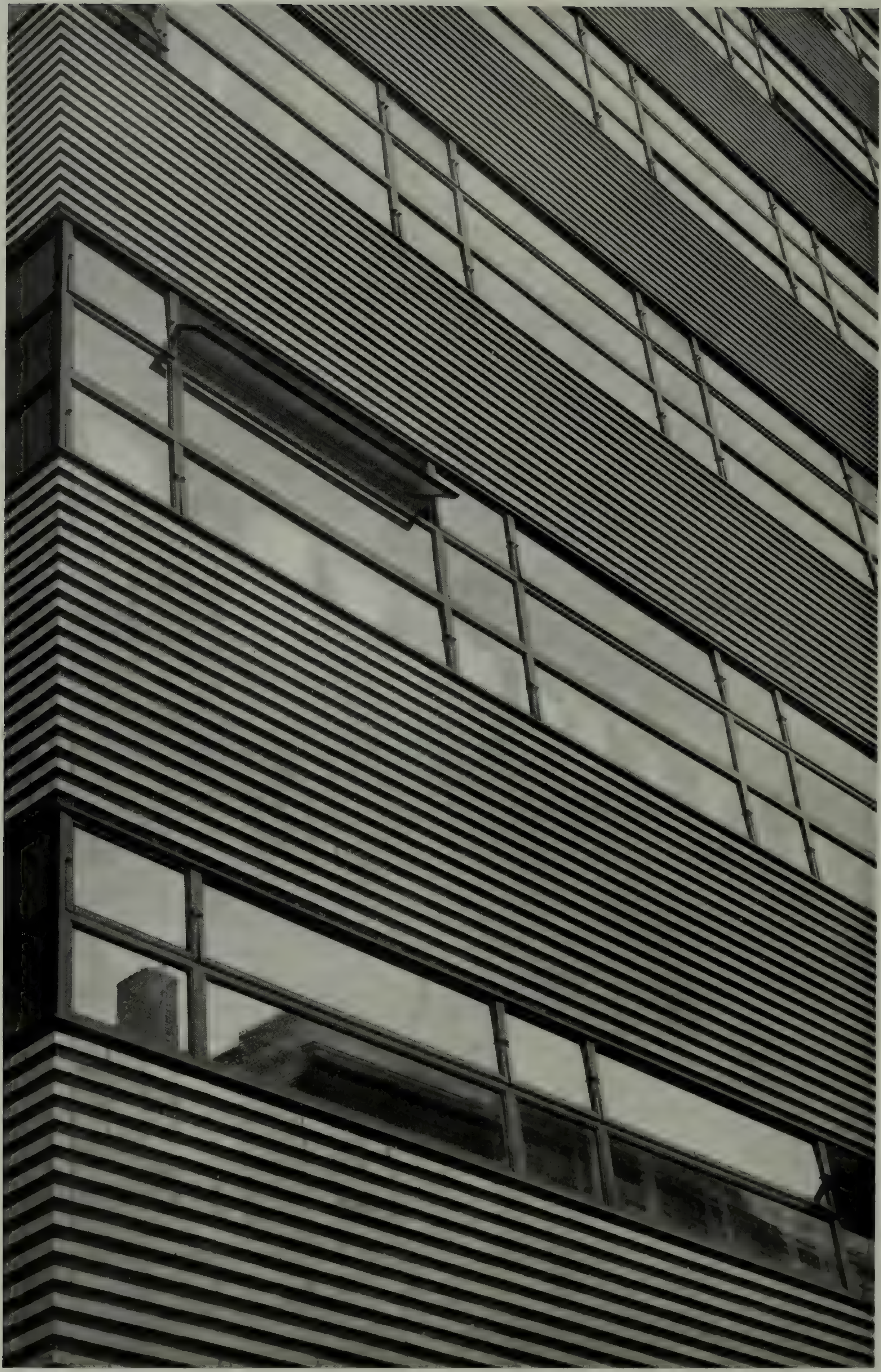
The fourth floor accommodates the library which connects through an open well by a double flight of stairs to a landing on the exhibition floor. The rear of the library is raised above the board of directors' room a few steps to the area allotted to book stacks and office space.

The fifth and exhibition floor is all on one level. Across the front and for two-thirds of the depth of the building is exhibition space. The remaining third is occupied by the students' dining room with a dining room for the faculty to the right and kitchen to the left.

The donor of the property has an apartment occupying the sixth floor which will eventually revert to the use of the school.

On the seventh floor is a wide, open room with a terrace to the front of the building. It is to be used as studio space.

Apart from affording the changes of floor level on the second, third and fourth floors, the auditorium,



Nyholm and Lincoln

THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

Detail of brickwork and windows. Black brick laid in mineral - pigmented black cement, buff brick jointed with buff cement.

with class rooms above, conditioned much of the plan. Its shape influenced the contour of the dance floor in the basement below it and the entrance lobby in front of it. Steel columns rest on the extremities of the girders which roof the auditorium. Throughout the building the void which it establishes in the centre of the structure is felt by the absence of columns and the openness of central space on each successive floor.

The side passages extending from back to front of the building provide fire exits from the rear classrooms above the auditorium as well as direct communication with the stage. Above the mezzanine these passages are covered by stairs and other extensions of the building.

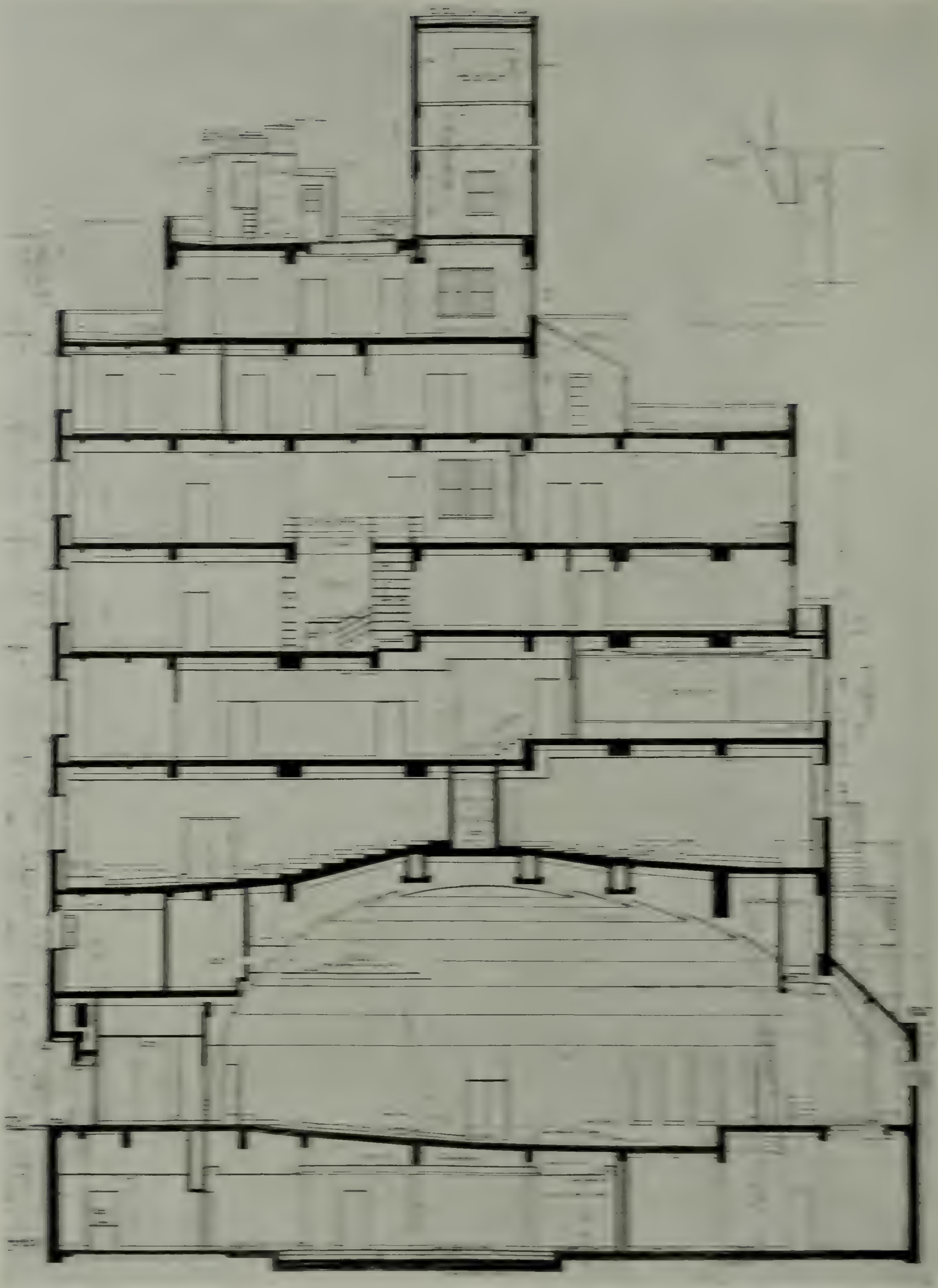
The auditorium occupies maximum space commanding good view of the stage. The domical cover, evolved as the logical enclosure to such a plan, provided location for the lighting scheme and also, originally, for the ventilating system. Adoption of a hung plaster ceiling 25 per cent perforated for acoustical reasons changed the ventilation scheme by permitting the use of the entire ceiling surface as a vent into the plenum chamber above. The auditorium functions acoustically like an open air theatre. The wood background of the stage and the folding wood curtains act as resonant reflectors for sound which is projected into the seating space and immediately absorbed through the ceiling perforations in the same way it would be dissipated in the air above an out-of-door stage. Right and left of the main stage are two side stages for choruses and music incidental to theatrical performances.

Professor Floyd R. Watson consulted on the acoustic problems of the room. The result in his estimation establishes a distinct advance in the science of acoustics which can lead to almost limitless possibilities in the variation of auditorium forms. In addition to the acoustic properties of the auditorium there is an interesting installation of electrical sound equipment to be connected by radio with the outside or used to transmit interior programs. A series of loud speakers makes possible giving music or speech simultaneously in the dance room, the auditorium and one of the upstairs classrooms. The main auditorium has also equipment at the speaker's desk which permits the amplification of a weak voice. The apparatus is controlled from one of the seats in the rear of the auditorium and possesses the remarkable quality of filling the room with uniform sound in such a way that no variation of intensity is noticeable between seats placed directly under the desk amplifier and seats in the rear of the room. In the center of the rear stage wall is a loud speaker horn 7 feet square which can be concealed by doors uniform with the stage walls. It is proportioned to the volume of the room and the stage. The shape of the stage further enlarges the trumpet action of the installation. Back of the rear stage wall is a sound chamber. In the peak of the stage chamber is a grille communicating back to the sound chamber. This connection acts precisely like the eustachian tube of the ear, equalizing air pressures on the diaphragm caused by varying volumes of sound. This device is essential when the sound box is separated from the room into which sound is projected. The large horn is also for use with sound motion pictures. A sound screen has been installed which can be lowered in front of the horn.

Beside the lighting apparatus and a floor trap there is no stage equipment, no gridiron and only such fly galleries as are needed to accommodate the motion picture screen with a velvet mat. Whatever scenery is to be used will be indicative of the mood, time and place of action, not pictorial. Two four-speed door sections opening in the middle supplant a curtain. The room functions acoustically without any curtaining usual to a theater. The only hangings are those in the side stage openings and at the back of the galleries. These are found unnecessary for sound purposes.

Since the building is to accommodate 2,000 students, additional sheltered sidewalk space in front of the entrances was a necessity. For this reason the entrance wall was set 3 feet back from the building line and the other stories were cantilevered out to the building line. As the site is on a narrow side street, windows were made continuous to admit as much light as possible. The building presents to the street a bay facade in horizontal bands of glass and continuous black and white brick spandrels enframed in the plain vertical black brick elevator and stair tower walls without windows. The mat black brick is laid up with ½″ mortar joints containing black mineral to provide a color as near black as practicable. The entrance is veneered with large slabs of black Coopersberg granite anchored to a common brick back wall; copings are mat-glazed black terra cotta. The soffit of the overhang is sheathed in bronze plates. Owing to the proximity of the elevator shafts it was impossible to eliminate the corner columns in the bay by cantilevering without excessive extravagance. The black and white brick facade batters one foot in its total height. This is accomplished by setting the sills a few inches back at each floor. The purpose of this device is to prevent the optical impression of the building leaning over the street, to rectify the tendency toward concavity in a line composed by joining vertical and horizontal members such as the window uprights and brick coursing. There is a slight addition to the quantity of light admitted to the interior by sky reflection which the backward cant emphasizes.

The exterior windows are specially made steel sash, the top and bottom units of each bay of the projected type, the other units fixed. The steel sash is set on the exterior face of the building. On the



THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

Contour of the auditorium dome provides, in the main classrooms above it, change of level which at the rear of the building continues through the third and fourth floors.

interior a second vertically divided casement sash is set flush with the inner face of the sill. The double windows allow a reduction of 25 per cent in heating costs for these window areas; they provide effective insulation against street noises. The width of the sill between windows permits the window cleaner to pass between the sash and reach all glass surfaces. The vertical articulation of the inside casements is also necessitated by the window cleaning problem. In the students' dining room the projected type of sash provides 100 per cent ventilated area and allows the decoration of an area of center wall which with double hung or other partially ventilating types of windows would have been lost.

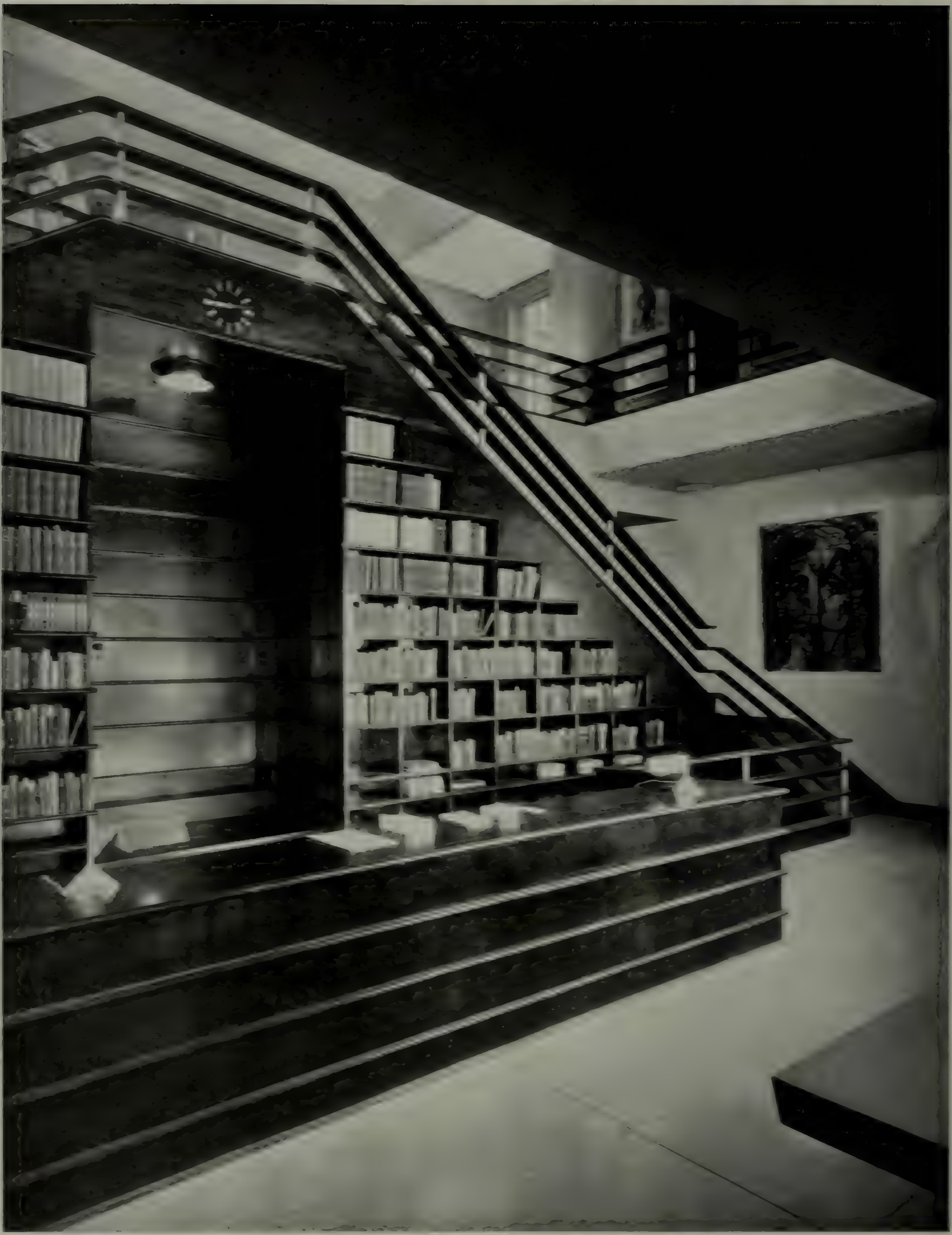
Direct radiation from heaters located generally under the windows supplies the heating of all rooms, except the entrance lobby where a hot blast recirculating system is used. The boiler is oil burning, operating at 0–15 pounds pressure. Condensate is returned to the boilers by vacuum pump. Separate supply and exhaust ventilating systems provide ventilation to the basement dance floor, the auditorium and two main classrooms. Unit ventilators of the recirculating type with fresh air inlets from out of doors supply the other rooms. The basement toilets are in separate exhaust systems while gravity exhaust ventilates the kitchen range hood and interior toilets.

Only the basement plumbing fixtures are on an ejector, the remainder of the sanitary system is gravity flow from the roof tank.

Lighting is designed mainly for a pleasant distribution of illumination where required. Most of the fixtures are of built-in design. Where cost prevented installation of ceiling boxes simple triangular fixtures, bulb and socket fixtures, hanging reflectors and circular metal domes with flat diffusing glass plates were designed. Each of the two mural artists has a different scheme of illumination. That in the board room decorated by Mr. Benton throws all the light on the murals, leaving the center portion of the room to be illuminated only by light reflected from the walls. In the students' dining room Mr. Orozco's desire was for general illumination which gave equal importance to all objects in the room without emphasis on the murals. He wished by this method not to exhibit the paintings as decorations but to keep them as much as possible a part of the life of the room. The lighting of the auditorium is designed to place dramatic emphasis on the stage. Four rings of the dome carry lights in reflectors, the upper ring 20 100-watt lamps, below it 32 100-watt lamps, and 40 60- and 48 50-watt lamps each. The stage equipment consists of three panels of four colored lights, red, blue, amber and white, each color having a capacity of 8000 watts. Four spots located in stage wings, two arcs in projection booth. One panel is over the proscenium, the others are in the side stages; all are hung on pipe battens. The entire auditorium lighting equipment is controlled from a room at the extremity of the left side stage by Vitrohm continuous duty dimmer plates of interlocking type. There is a master lever for the auditorium ceiling lights and a master control of 110 steps for each section including the balcony lights. The electrical energy supplying lighting to the building is 4 wire 120/128 volts. The entrance lobby and dance floor are completely cove-lighted; in both rooms the lighting follows the ceiling contour with the addition in the basement of a rectangular cove over the dance floor. These examples of strip and cove lighting taken with the illuminating system of the auditorium contribute the newest uses of architectural lighting to be seen in the building.

Light and power are operated generally separate and are connected with a main distribution board.

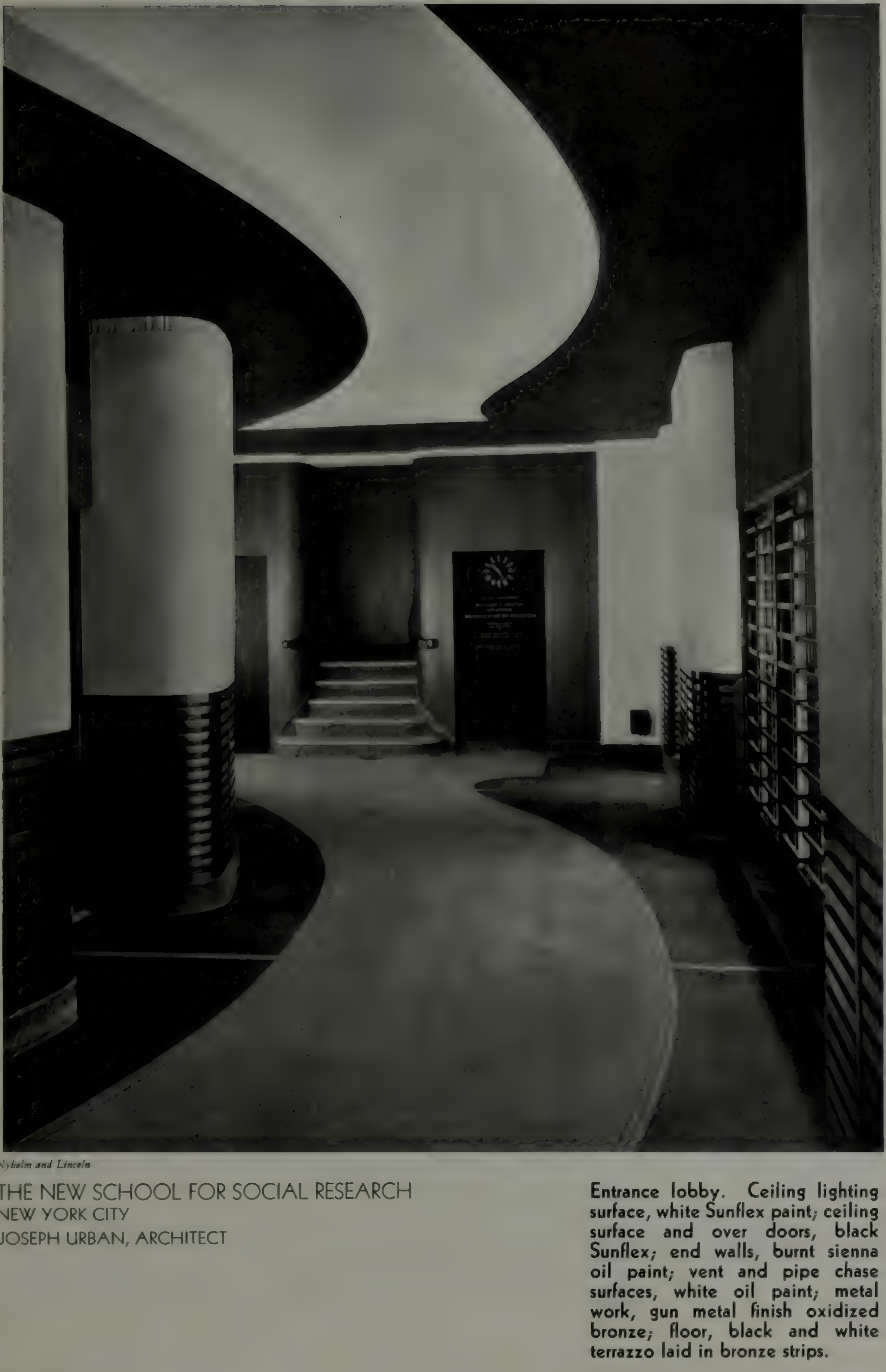
Color has been extensively used in the building. Behind the glass of the facade is visible part of the color scheme. It shows in blocks of red, blue, green, yellow, orange, white, purple, brown, dark blue, as it occurs in the rooms behind the glass. The gamut of color is for the most part strong; a few pale yellows are used, no reds darker than an English vermilion but a variety of greens, blues and browns, all the way to black. The total is ninety colors including white. The use of color has had various purposes in different rooms, governed generally by principles of lighting; cool colors in shadow; warm colors in light; large areas of color of high reflecting power against smaller areas of colors with high absorption to even out the illumination of the rooms. Beyond these principles of application are other considerations, balance of accent, focusing attention at a desired point in the room, maintenance of a diagrammatic scheme to add to the legibility of planning where needed, and selection of colors for their emotionally reactive values. By confining color to the actual planes of the building accenting structural features—columns, for example, are generally kept white—architectural values are enhanced and color given its proper function in building. The ceilings and walls, where not exposed to wear, are executed in a new casein matt paint; the remainder of the work is oil stippled flat except where staining is used on cork or woodwork.



Nyholm and Lincoln

THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

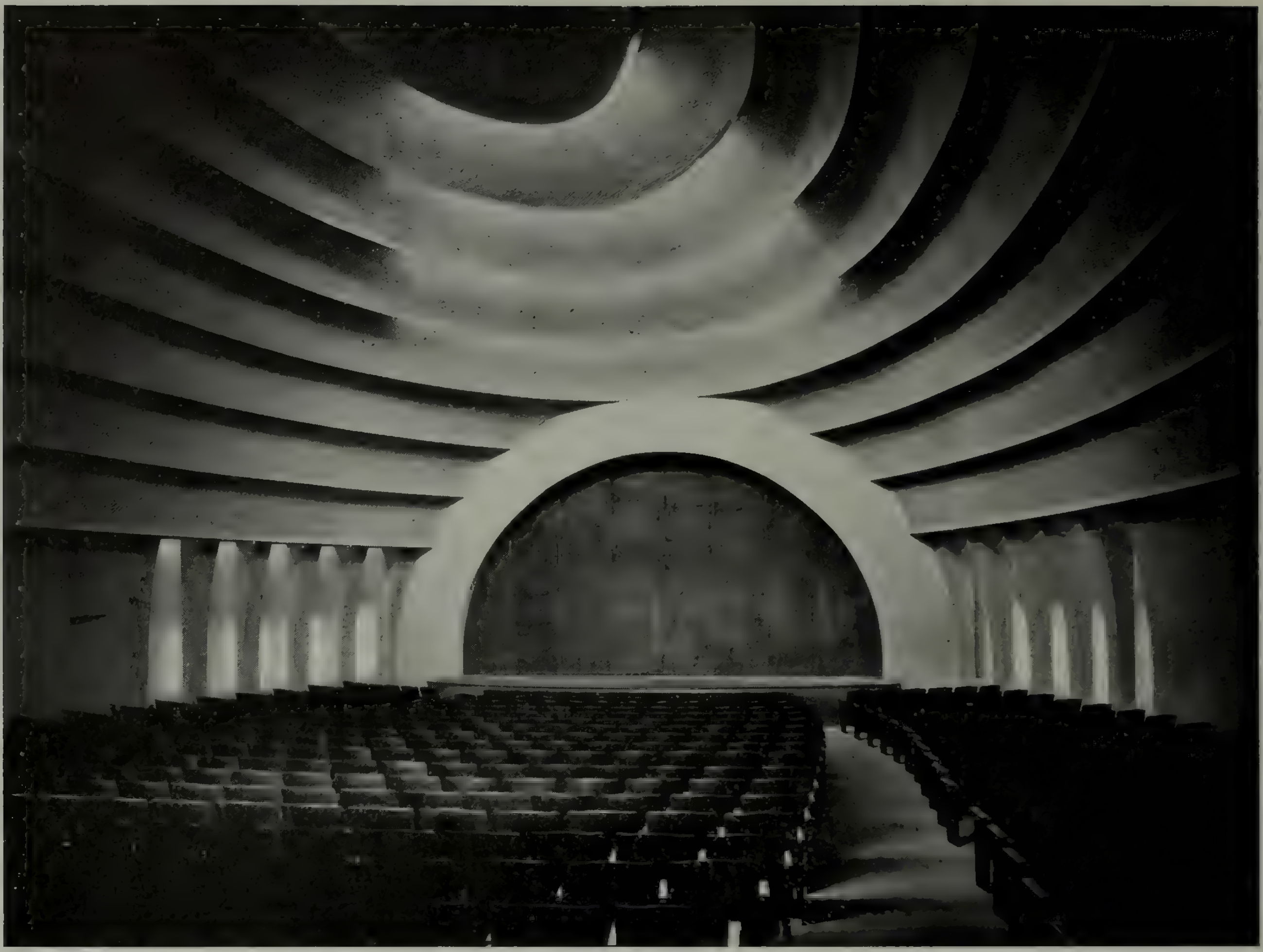
Staircase between library floor and exhibition and dining floor. Library ceiling, deep blue; plane under right and left balconies, gray; wall back of stairs, light chrome yellow; exhibition floor walls, gray; ceiling and columns, white. Maple trim, black, showing wood grain slightly.



Nyholm and Lincoln

THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

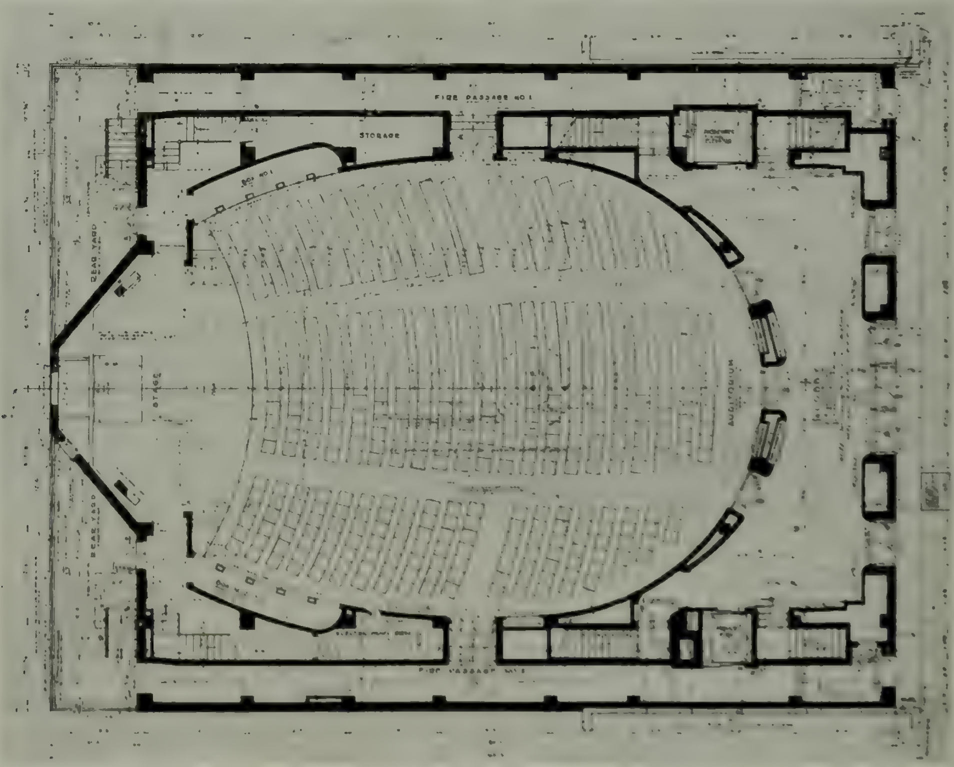
Entrance lobby. Ceiling lighting surface, white Sunflex paint; ceiling surface and over doors, black Sunflex; end walls, burnt sienna oil paint; vent and pipe chase surfaces, white oil paint; metal work, gun metal finish oxidized bronze; floor, black and white terrazzo laid in bronze strips.



Nyholm and Lincoln

Auditorium. Hung plaster ceiling 25 per cent perforated to produce acoustic conditions similar to those of an open-air theater. Main stage opening closed by two 4-speed doors; stage cyclorama and side stage walls built of maple with one thin coat of white paint to aid in reflecting colored lighting. Walls, gray Sunflex graded in nine tones to top of ceiling; proscenium and ceiling reveals of English vermilion; carpet to match; chair seats, dark gray; seat backs and stage doors, black.

FIRST FLOOR PLAN



THE NEW SCHOOL
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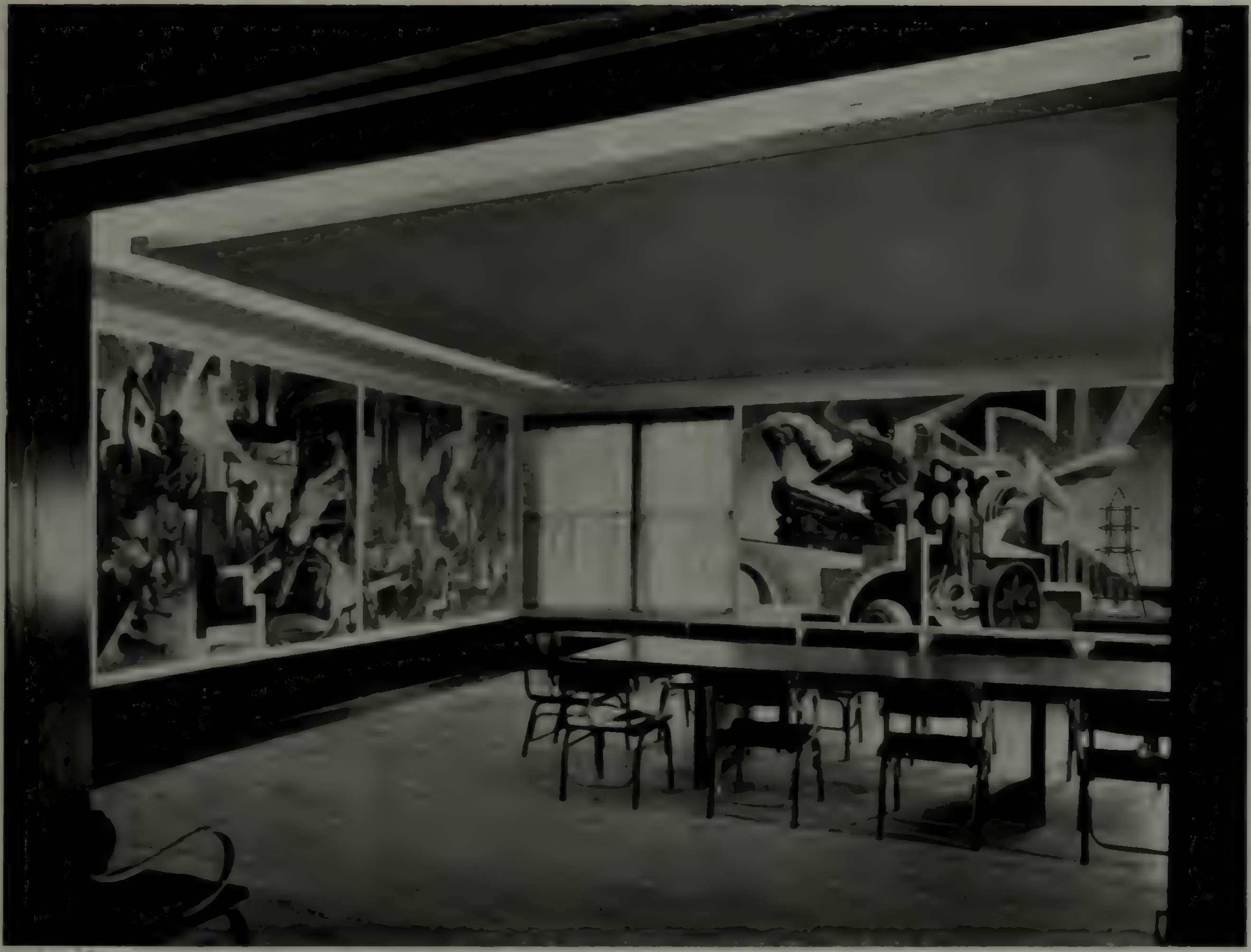
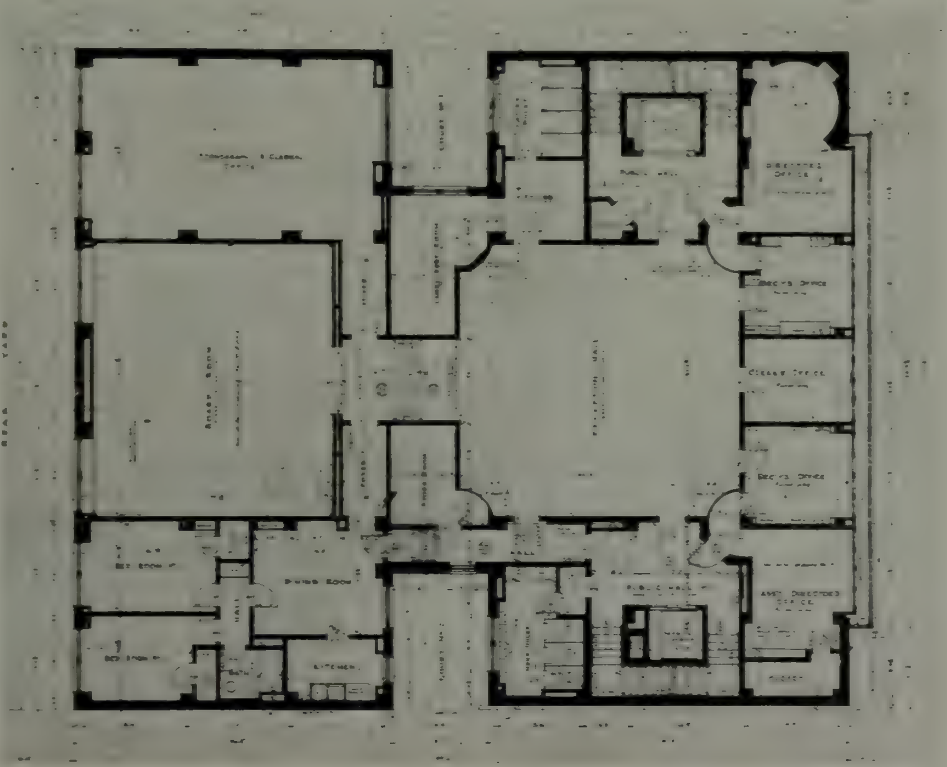
JOSEPH URBAN, ARCHITECT



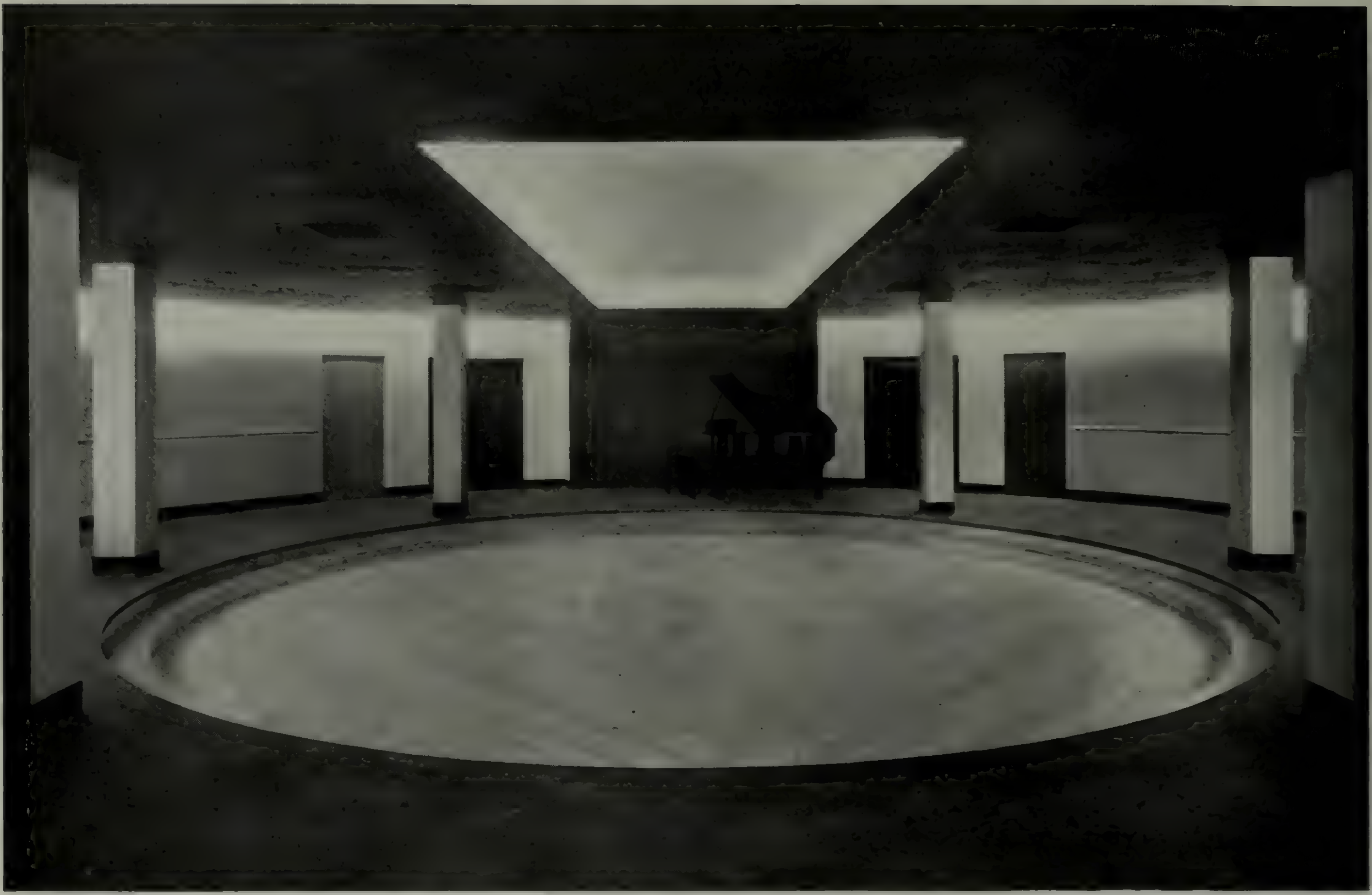
Nyholm and Lincoln

Board of directors' room. Murals by Thomas Benton. Ceiling, terra cotta Sunflex; lighting fixture, opal glass; moldings, aluminum leaf wainscot; doors and tables, black eggshell finish lacquer; floor varnished maple; curtain material, cerulean blue.

THIRD FLOOR PLAN



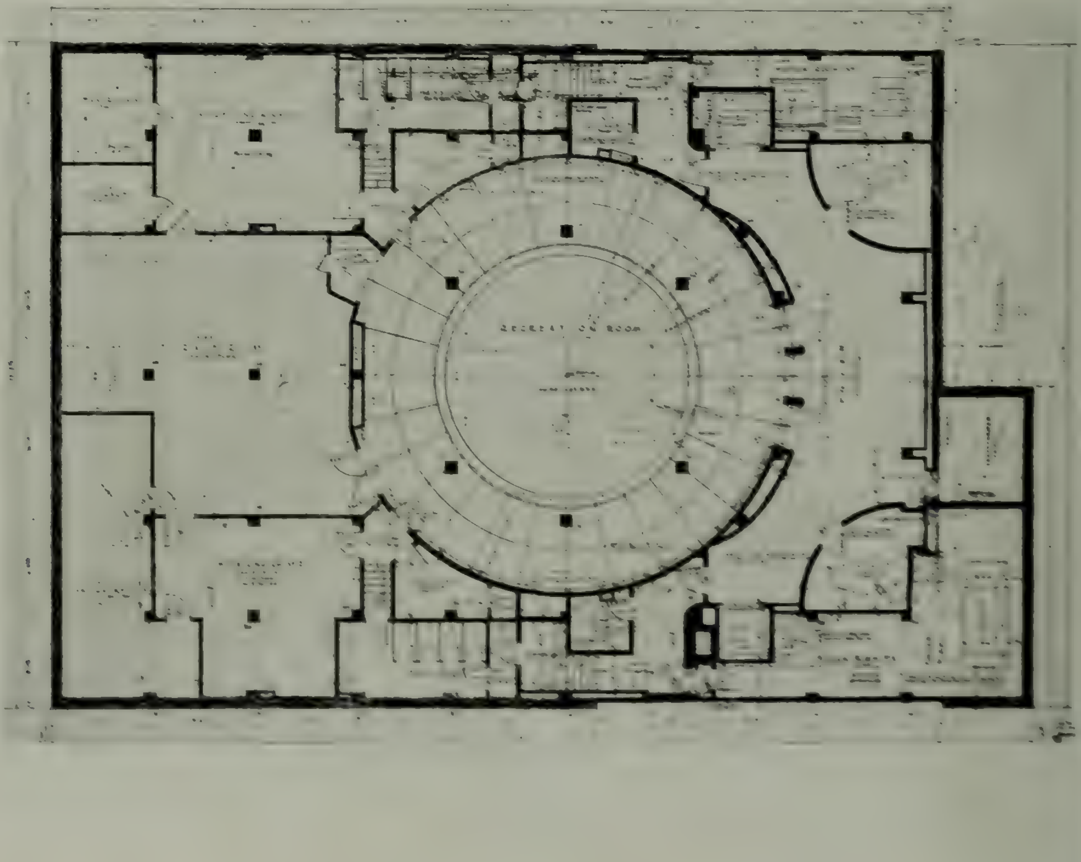
THE NEW SCHOOL
FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT



Nyholm and Lincoln

Dance floor. Dancing surface, varnished and waxed maple; surrounding floor, dark blue Marbleoid; ballet rail, aluminum; ceiling, black and white Sunflex. Walls, deep blue, citron, English vermilion, emerald green, orange, ochre, cobalt blue, delft blue; rectangles in flat oil paint; columns, brushed aluminum paint.

BASEMENT FLOOR PLAN



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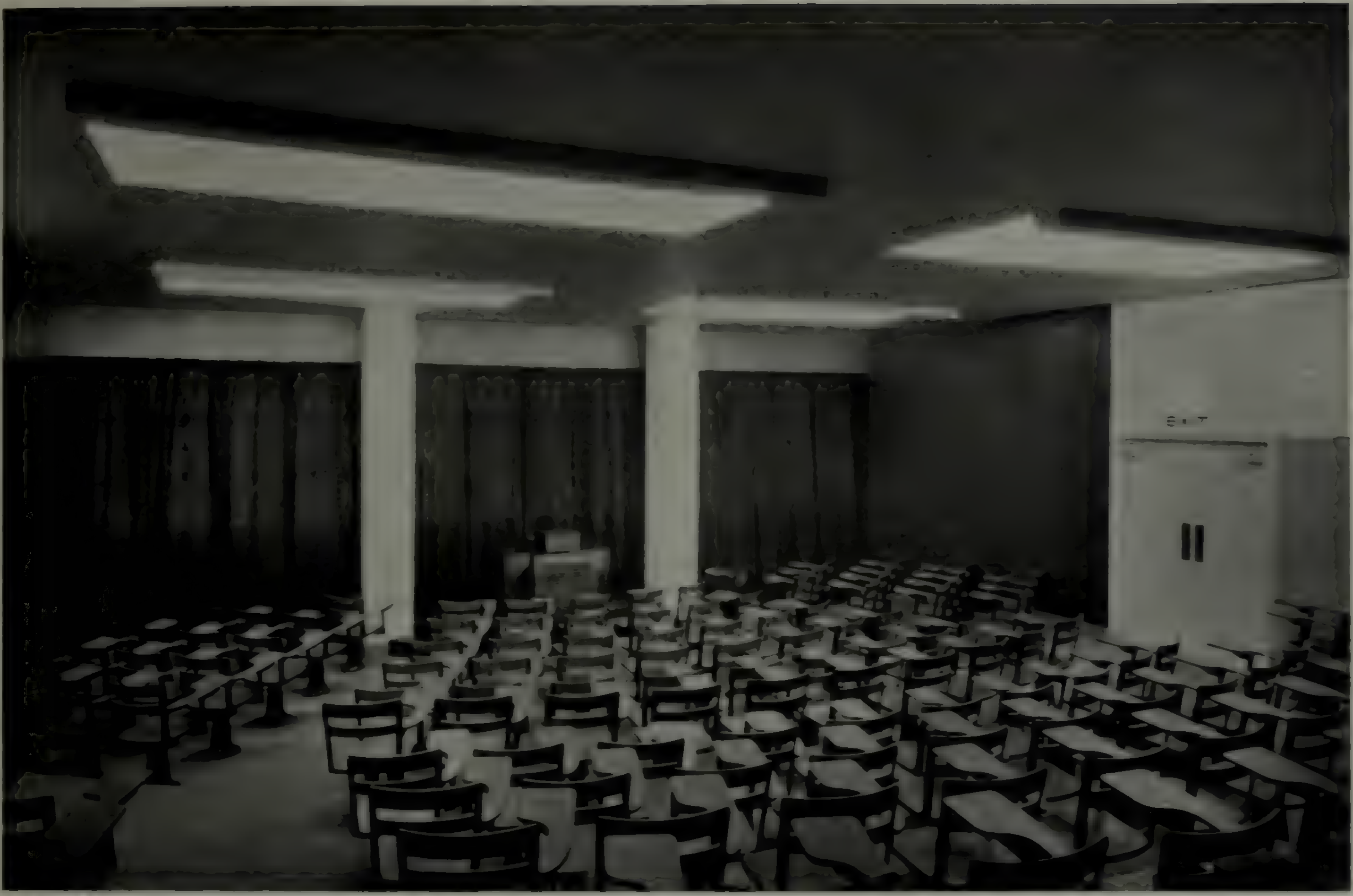
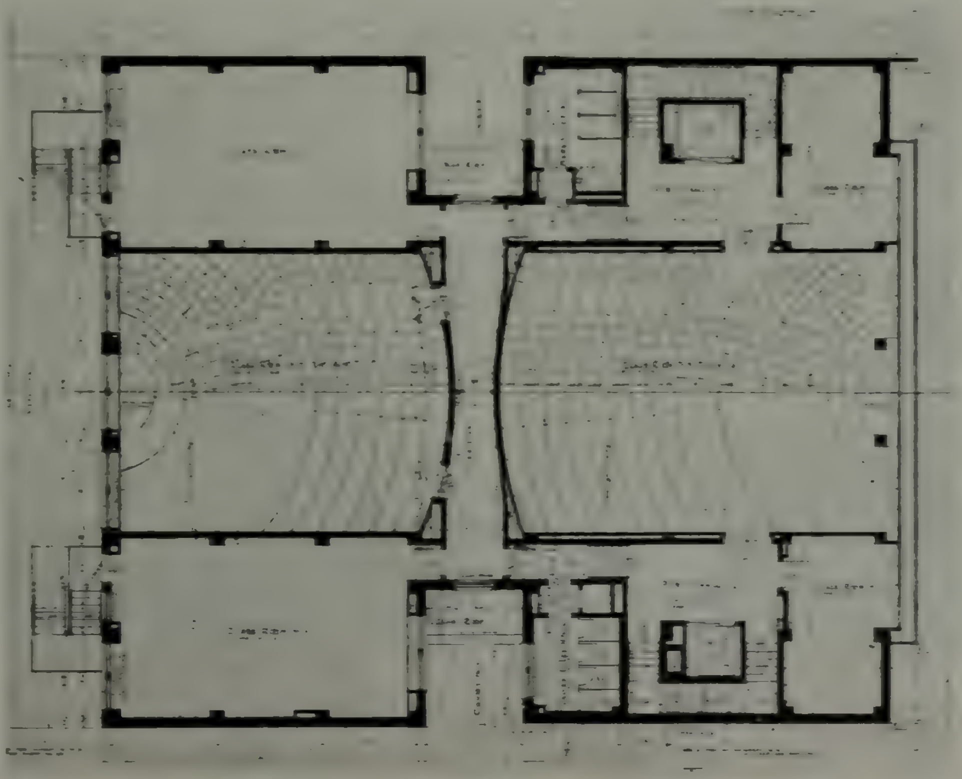


Nyholm and Lincoln

Main front classroom. Pale yellow ceiling; window wall, gray-blue; curtains, indigo blue; columns, white; side walls, deep green-blue; doors, pale chrome yellow; strip over door to back of room, white; strip below, deep orange; rear wall, gray-blue.

SECOND FLOOR PLAN



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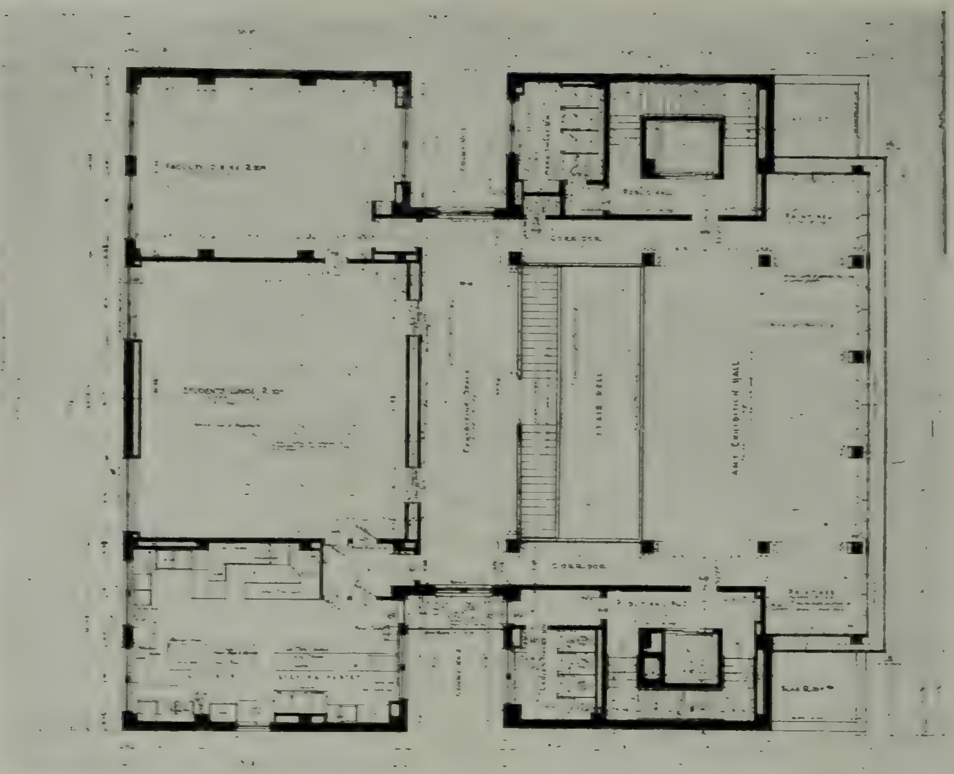
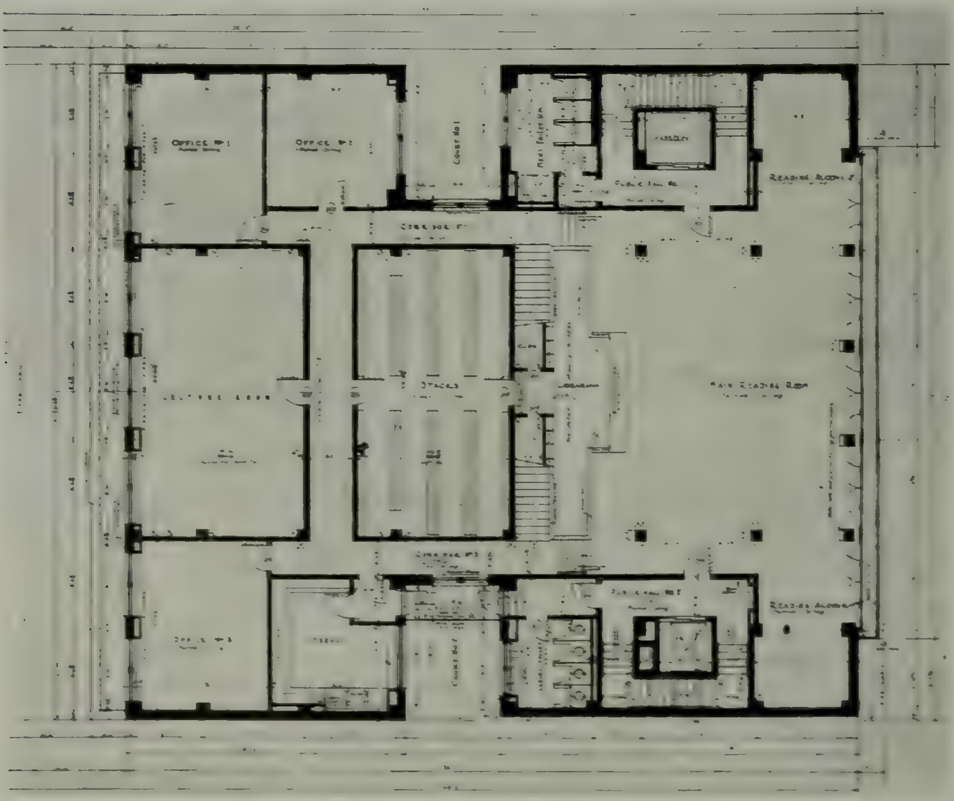
JOSEPH URBAN, ARCHITECT



Fifth floor plan: front, exhibition space; rear, students' lunchroom, faculty dining room, kitchen; center, stair well down to library.



Fourth floor plan: front, library reading room; rear, temporary office space for later stack room extension; center, stack rooms and stai well to fifth floor.

THE NEW SCHOOL FOR SOCIAL RESEARCH
NEW YORK CITY
JOSEPH URBAN, ARCHITECT

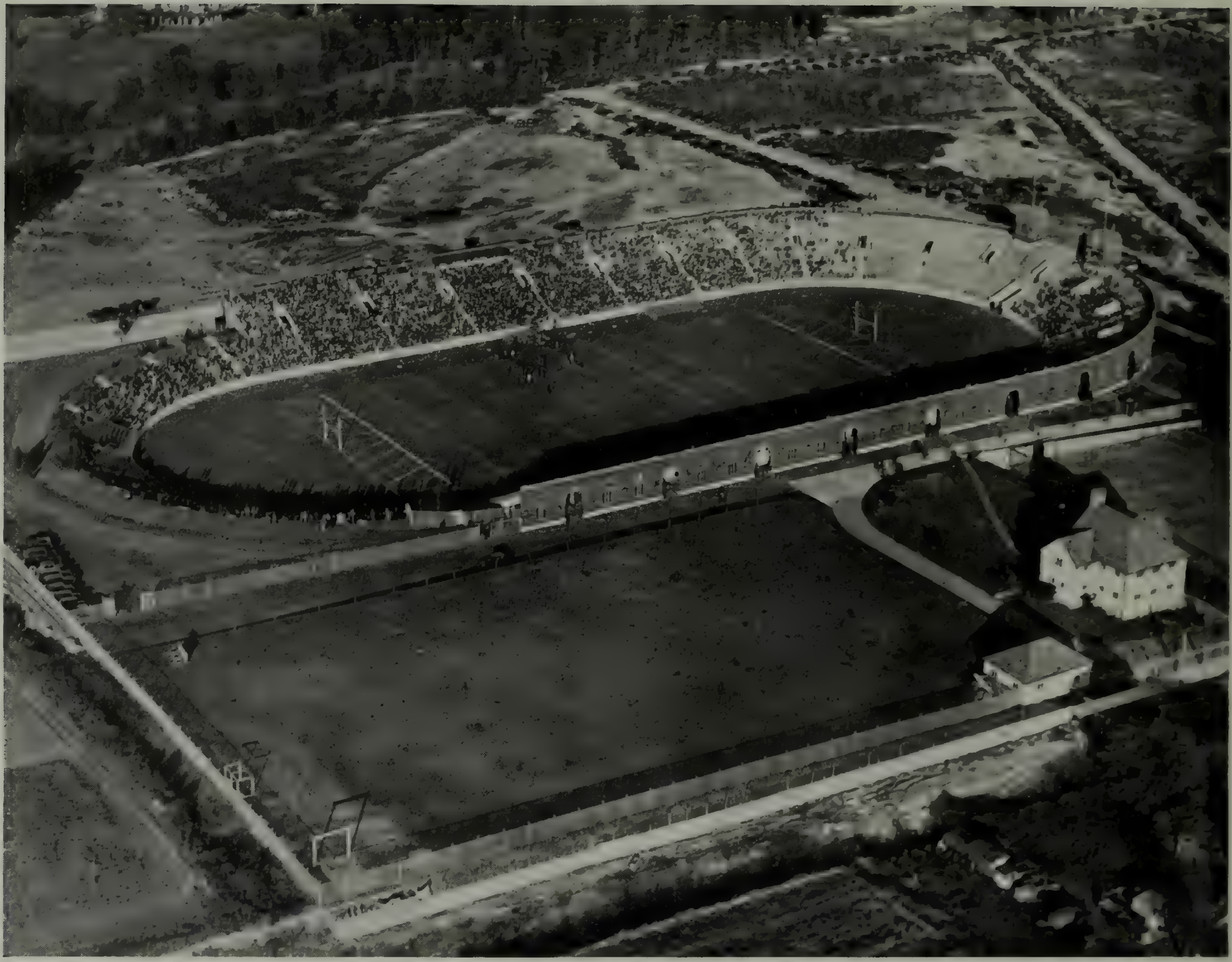
TECHNICAL NEWS AND RESEARCH

STADIUM PLANNING

By MYRON W. SERBY, Stadium Consultant

Stone from Galloway

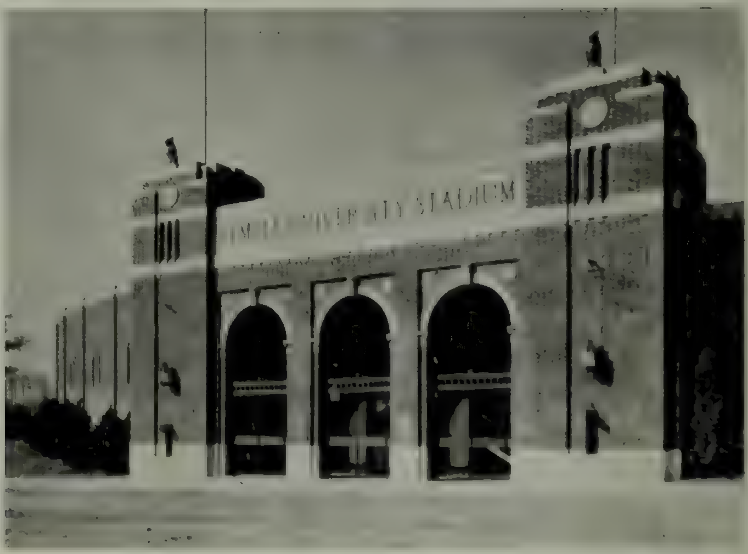
MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA
JOHN GALEN HOWARD, ARCHITECT
E. E. CARPENTER, CONSULTING ENGINEER



© *Aerial Photographic Service*

TEMPLE UNIVERSITY STADIUM
PHILADELPHIA
CLARENCE E. WUNDER, ARCHITECT AND ENGINEER

Suburban location permits additional playing fields and ample parking space for automobiles.



STADIUM PLANNING AND DESIGN

By MYRON W. SERBY

The average stadium has a seating capacity of 5,000 to 20,000. There are about forty large stadiums seating from 20,000 to 125,000 in the United States. Of these, twenty-two are owned by educational institutions, twelve by professional baseball clubs and six by municipalities. The first of the large stadiums was built at Harvard, followed by stadiums at many other educational institutions. Organized baseball then found it necessary to provide for the increasing multitudes of interested baseball fans. These stadiums came into being through virtual necessity and their immense earning capacities were assured at the outset.

Municipalities are slowly awakening to the public need for adequate stadiums. Where conditions are favorable, stadiums are "gilt-edge" business propositions yielding a high return and will continue to draw their enthusiastic multitudes long after they have paid for themselves. The recent development of night illumination brings the stadium into our national life as a means of recreation for the general public, equal in importance to radio, motoring, moving and talking pictures.

There are about 1,300 cities with populations of 5,000 to 25,000; 225 cities with 25,000 to 300,000; and 27 cities with populations over 300,000. It is evident that the six existing municipal stadiums should serve as a nucleus for a tremendous development in this field in the near future.

PLAY AREAS

All that space within the stadium allotted to the use of the players or performers for a given athletic game or contest is referred to as the play area. This area includes the space within the official boundaries together with sufficient clearance outside the lines for out-of-bound plays.

Football

Football, according to the rules of the National Collegiate Athletic Association, is played upon a rectangular field 360 feet in length and 160 feet in width. Goal lines are established in the field of play 30 feet from and parallel to the end lines. The goal posts are placed 18 feet 6 inches apart in the middle of each end line; they should exceed 20 feet in height, with a horizontal cross bar 10 feet from the ground.

A minimum clearance of 20 feet is allowed outside the official field of 360 by 160 feet. Thus the minimum football play area is 400 by 200 feet. All the area beyond these dimensions is available for spectators.

Baseball

In practice football fields are laid out in close conformity to the official rules. This is not the case in baseball, in which playing fields used by professional clubs vary from the rules in many particulars. According to the Joint Playing Rules Committee of the National League and the American League, amended by the National Joint Rules Committee of Professional Baseball:

"The ball ground must be enclosed. To obviate the necessity for ground rules, the shortest distance from a fence or stand on fair territory to the home base should be 235 feet and from home base to the grand stand 90 feet."

Home base and first, second and third bases are at the corners of the 90-foot diamond. In the junior diamond for boys under 16 years of age the base distances are reduced to 82 feet.

A strict interpretation of the official rules would provide for the playing field a quadrant with a radius of 235 feet, but the long sides, referred to as left and right foul lines, must be greater than 235 feet in order to increase the difficulty of batting home runs. The home run due to short foul lines is now the subject of much agitation in organized baseball. The lively ball is also involved in this discussion. A study of the fifteen major league park measurements indicates that four have short left foul lines with longer right foul lines. Ten have short right foul lines. One has foul lines of equal length. The practice of providing one long foul line is explained by the fact that most ball parks are also used for football.

The following figures will show the range of foul lines in use:

Short foul lines		
Maximum	365 feet	Boston Nationals
Minumum	258 feet	N. Y. Americans
Average	315 feet	(15 parks)
Long foul lines		
Maximum	402 feet	Boston Nationals
Minimum	280 feet	N. Y. Americans
Average	353 feet	(15 parks)

In addition to the wide departure of foul line distances from the rules, the distance from home base to the grandstands is often as short as 60 feet instead of the 90 feet required. The reason, of course, is to improve the view by bringing the playing field closer to spectators who are usually massed near the diamond.

One authority, in order to provide for greater uniformity in the layout of future baseball grounds, has suggested that the rules be amended as follows:
"To obviate the necessity for ground rules, the right foul line distance shall not be less than 300 feet nor more than 315 feet; the left foul line distance may be equal or greater than the above. The distance from home base to the grandstands shall not be less than 60 feet nor more than 90 feet."

The above suggestion conforms closely to actual conditions and should produce satisfactory baseball play in professional or amateur games. The 60 feet clearance behind home base may follow the arc of a circle with center at home base, thence following a tangent to this circle to an offset of 20 feet at the ends of foul line distances. This gives a play at the ends of foul line similar to that at the Yankee Stadium with a minimum length of 410 feet and width of 426 feet.

It is apparent from the above dimensions that whereas football play areas can be contained within baseball play areas, the reverse is not the case.

Track and Field Athletics

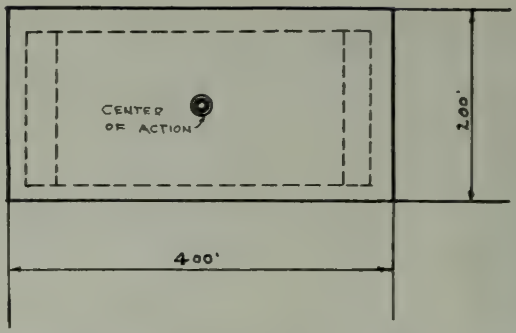
This phase of athletic competition is governed by the rules of the following:

Intercollegiate Amateur Athletic Association.
Amateur Athletic Union of the United States.
American Olympic Committee.
National Collegiate Athletic Association.
National Committee on Women's Athletics of American Physical Education Association.

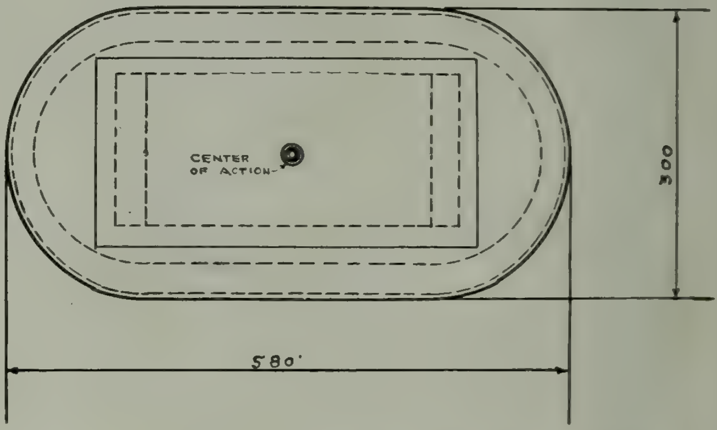
Track and field athletics originate from early Greek times, when stadiums were built to accommodate the crowds attending the sacred ceremonies of the Olympic games. In modern times these competitions are of international as well as national importance. While not so remunerative as football and baseball, no stadium is complete without a running track for track athletics.

Running tracks are built in connection with football and baseball stadiums. Accompanying diagrams give data for laying out tracks around football fields. With an inside clearance of 12 inches, the inner perimeter of the track layout is one-quarter of a mile, extensions of one or both sides being made for 220-yard straightaways. The oval with 225-foot tangents and relatively long radius is similar to that at Franklin Field stadium in Philadelphia. This is one of the best and fastest tracks in the country, the scene of many records. The oval with 350-foot tangents approximates the dimensions of the Ohio State stadium. Between these two extremes considerable latitude exists as to choice of dimensions. In general, ovals with short tangents and long curves are more satisfactory.

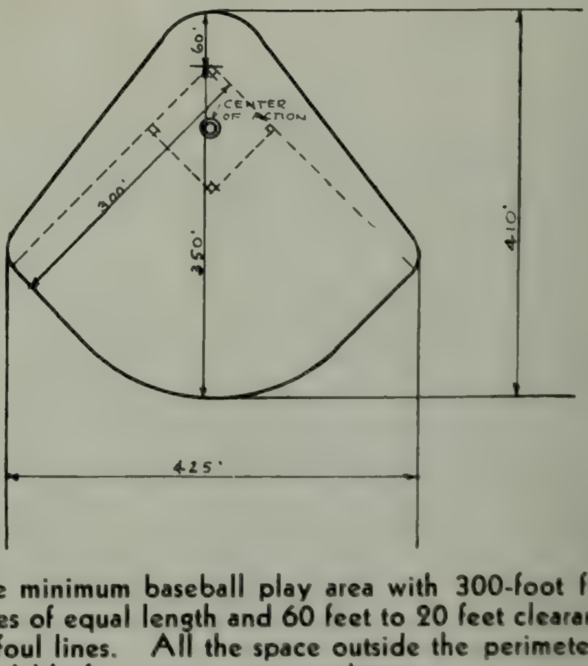
In layout of tracks associated with baseball fields



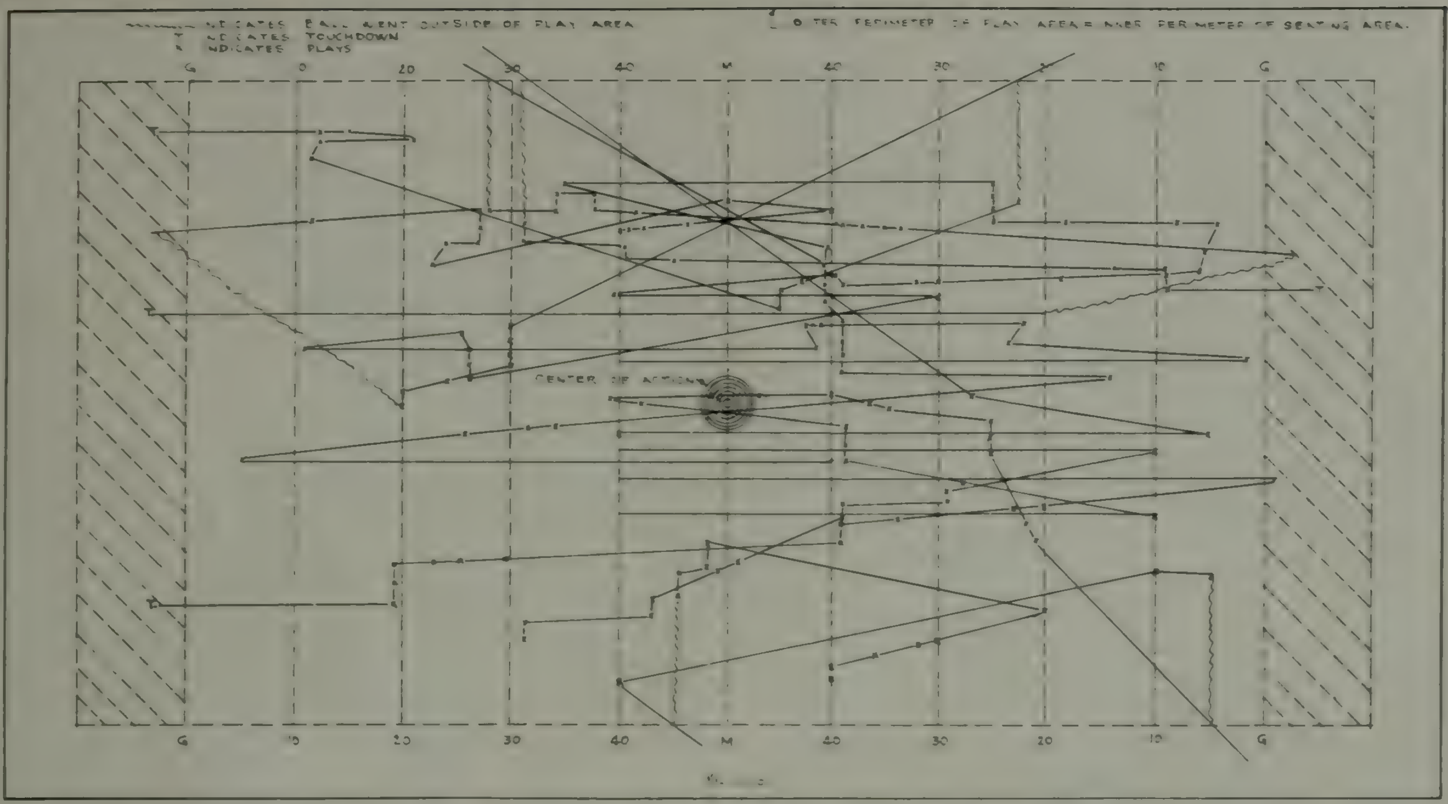
The minimum football play area is 200 by 400 feet, allowing 20 feet clearance beyond boundaries of official field.



A typical play area for football and track athletics. The track tangents may be extended for 200-yard straightaways. This is the usual layout hitherto used in educational and municipal stadiums. Official baseball cannot be played in this play area layout without ground rules, thus reducing greatly the usefulness and income value of the stadium.



The minimum baseball play area with 300-foot foul lines of equal length and 60 feet to 20 feet clearance at foul lines. All the space outside the perimeter is available for seating accommodations.


INDICATES BALL WENT OUTSIDE OF PLAY AREA
T INDICATES TOUCHDOWN
INDICATES PLAYS
OUTER PERIMETER OF PLAY AREA = INNER PERIMETER OF SEATING AREA.
G
10
20
30
40
M
40
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10
G
CENTER OF ACTION

FOOTBALL ACTION LINES, NOTRE DAME-UNIVERSITY OF SOUTHERN CALIFORNIA GAME, 1930

Sketch illustrates locus of action points during a football game. The center of action is in the center of the play area.

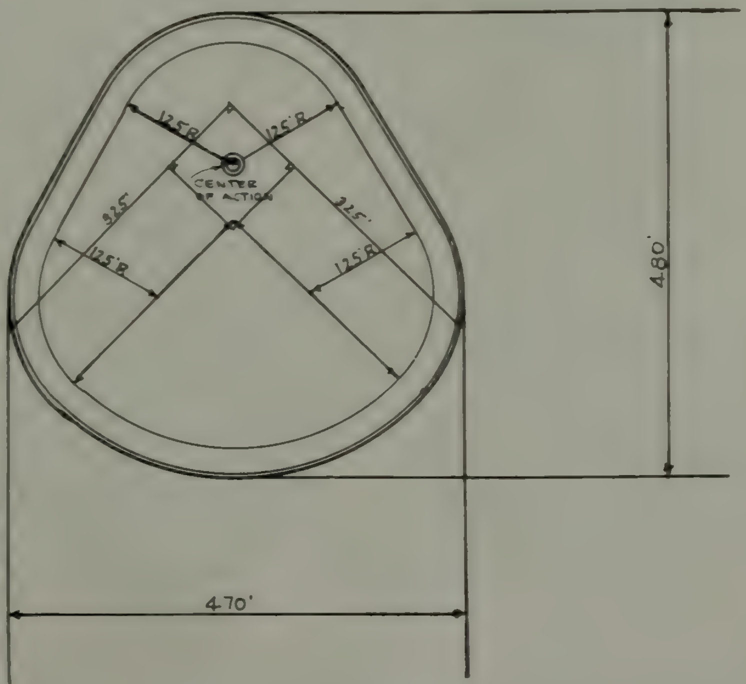
it is impracticable to use oval tracks. The track layout must conform to the shape of the play area or the play space available. Hence such layouts are pear-shaped as in the Yankee Stadium, rectangular with rounded corners, or circular with a 100-yard straightaway across the field. Moreover, when conditions require, the lap distance may be reduced to one-fifth of a mile.

The problem of laying out running tracks in connection with baseball fields is one that requires careful study for each individual stadium, and with the necessity for providing good view, in so far as spectators are concerned, is one that will challenge the ingenuity of the stadium designer. A running track of any shape or distance is better than nothing at all; regardless of lack of conformity to the usual layouts such a track will add greatly to the usefulness of a stadium.

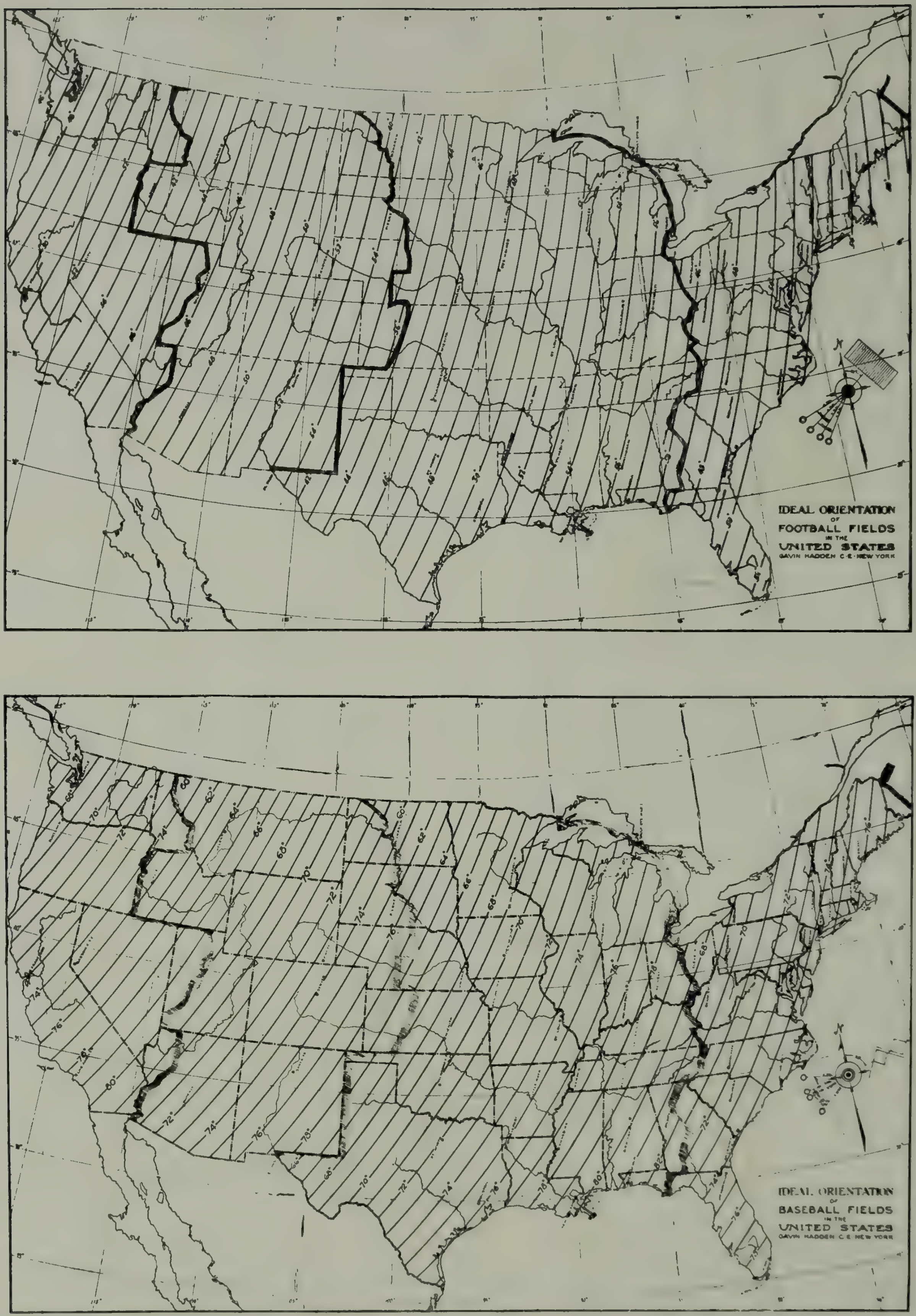
Other Attractions

The game of soccer or association football is similar in field requirements to that of football. Hence the football play area will accommodate soccer as well.

If provisions are to be made for exhibiting boxing and wrestling the space necessary for the performers is easily provided. A clear space of 30 feet square is required. The ring is elevated about 4 feet above grade. The greatest difficulty arises out of the necessity for providing good view, especially in behalf of ringside spectators. Good view is also a major consideration when the stadium is used for concerts, lectures, tennis, and the like.



Egg-shaped play area for baseball with one quarter mile running track. The tangents may be extended for 220-yard straightaways. This layout may be used for baseball, track athletics, and football.


IDEAL ORIENTATION OF FOOTBALL FIELDS IN THE UNITED STATES
GAVIN HADDEN C.E. NEW YORK
IDEAL ORIENTATION OF BASEBALL FIELDS IN THE UNITED STATES
GAVIN HADDEN C.E. NEW YORK

IDEAL ORIENTATION OF FOOTBALL AND BASEBALL FIELDS

These maps, developed by Gavin Hadden, engineer, determine at a glance the ideal direction of the minor axis of football fields, based on a playing period from 2 p.m. to 4 p.m. between September 27 and November 27, and of baseball fields, based on a period from 3 p.m. to 5 p.m. between March 21 and September 21. Two choices of orientation are possible for baseball fields, as shown on the map to the right of the north arrow.

Orientation

Orientation refers to the azimuth of play area axis. The axis or center line of the football stadium is a longitudinal line passing through the goals. In the baseball stadium it is a line passing through home base and second base. The azimuth of this line or its angle with the true north is the orientation of the stadium.

Orientation concerns the effect of the sun's direct rays on public and players. During the summer months this matter is of prime importance in baseball stadiums. In major league baseball stadiums where the bid for public patronage is supported by careful provisions for the comfort and convenience of patrons, the better seats are shaded by proper orientation and roofs. With the exception of batter and catcher, the players must "take the sun."

Careful computations are required to determine the correct orientation to meet local conditions. For amateur games experts heretofore have considered mainly the comfort of players. This is a matter for careful consideration, for it is always possible to average the discomfort by shifting the glare to a portion of the seating area.

As football is a fall-season attraction the sun is usually welcome, especially near the end of the year. In ordinary cases the axis should be at right angles to the sun's azimuth. At 3 o'clock for the larger part of the United States the sun's azimuth is due west. Hence the football field axis is approximately north and south.

Drainage

Good drainage requires provision for both surface and underdrainage. Run-off by surface drainage is provided by grades of one-half to three-quarters of 1%. Such grades drain moisture quickly to inlets, gutters, blind drains and sewers. Where moisture cannot drain directly to gutters, open vents or vertical tee inlets to drains or sewers may be used. These may be provided with removable tops, rubber-capped, which are kept in place only during games.

The function of underdrainage is to remove excess moisture from the subsurface between rains. Good underdrainage means a porous soil texture which will absorb precipitation. The drains draw off this moisture and lower the water line, the result producing what athletes refer to as a "springy" field in contrast with hard playing fields which are troublesome to their legs.

For average conditions underdrainage should consist of 6-inch drain tile lines on 50-foot centers, properly connected to sewers. These are minimum requirements. It is advisable to secure expert advice from consultants familiar with local conditions.

Surfaces

Play areas are finished mainly by seeding and sodding, with cinder finish for running tracks and bare or "skinned" areas for base lines of baseball diamonds. The diamond consists of a flat turtleback or very low pyramid, with the four bases at the same elevation and the pitcher's mound elevated 12 inches or more above the base lines. This grading insures rapid surface drainage of the diamond.

An excellent play field for football is prepared by placing a 10-inch layer of cinders over the entire field, to be covered with another layer of sandy loam, and finished with blue grass sod.

A very good running track consists of a 12-inch layer of cinders under a 4-inch top layer of one part clay and three parts ¼" screened cinders, the running track of 21-foot width being pitched 2 inches toward the inner edge. The wearing surface is a ½" dressing of ¼" screened cinders, all to be thoroughly compacted by rolling. In some localities local crushed shell is used in place of cinders.

Combination Play Areas

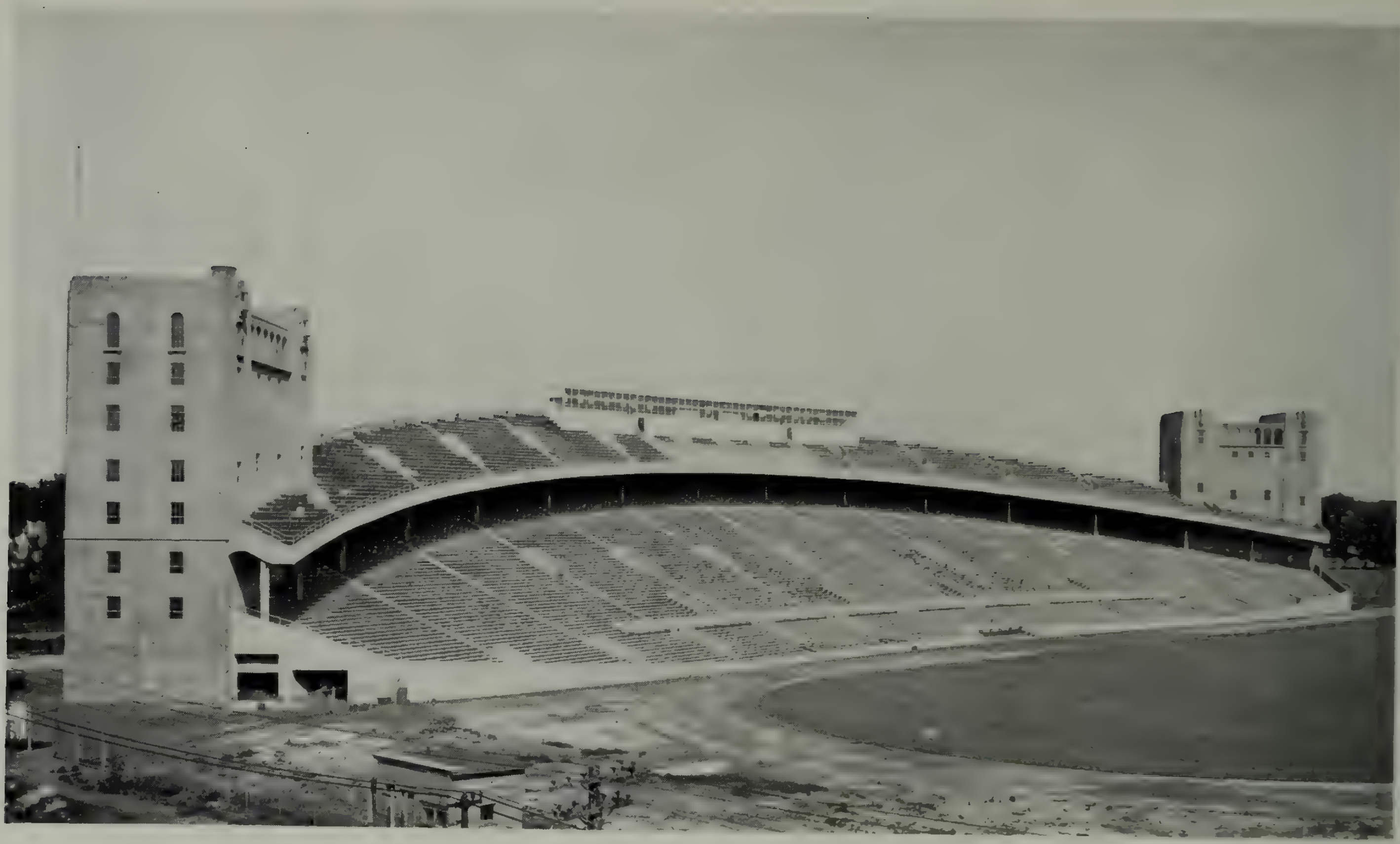
The football season includes the three fall months. Track and field athletics occur during the spring. Baseball is played the six months of spring and summer. Thus the football season follows baseball, the two combining to provide a continuous season of outdoor athletic competition during all that period when outdoor attractions can be exhibited under weather conditions prevailing in the more densely populated sections of our country.

Football attracts approximately fifteen million attendance during its three months of play, while baseball in six months draws about twenty-five million. These estimates include all games—professional, collegiate, scholastic and local.

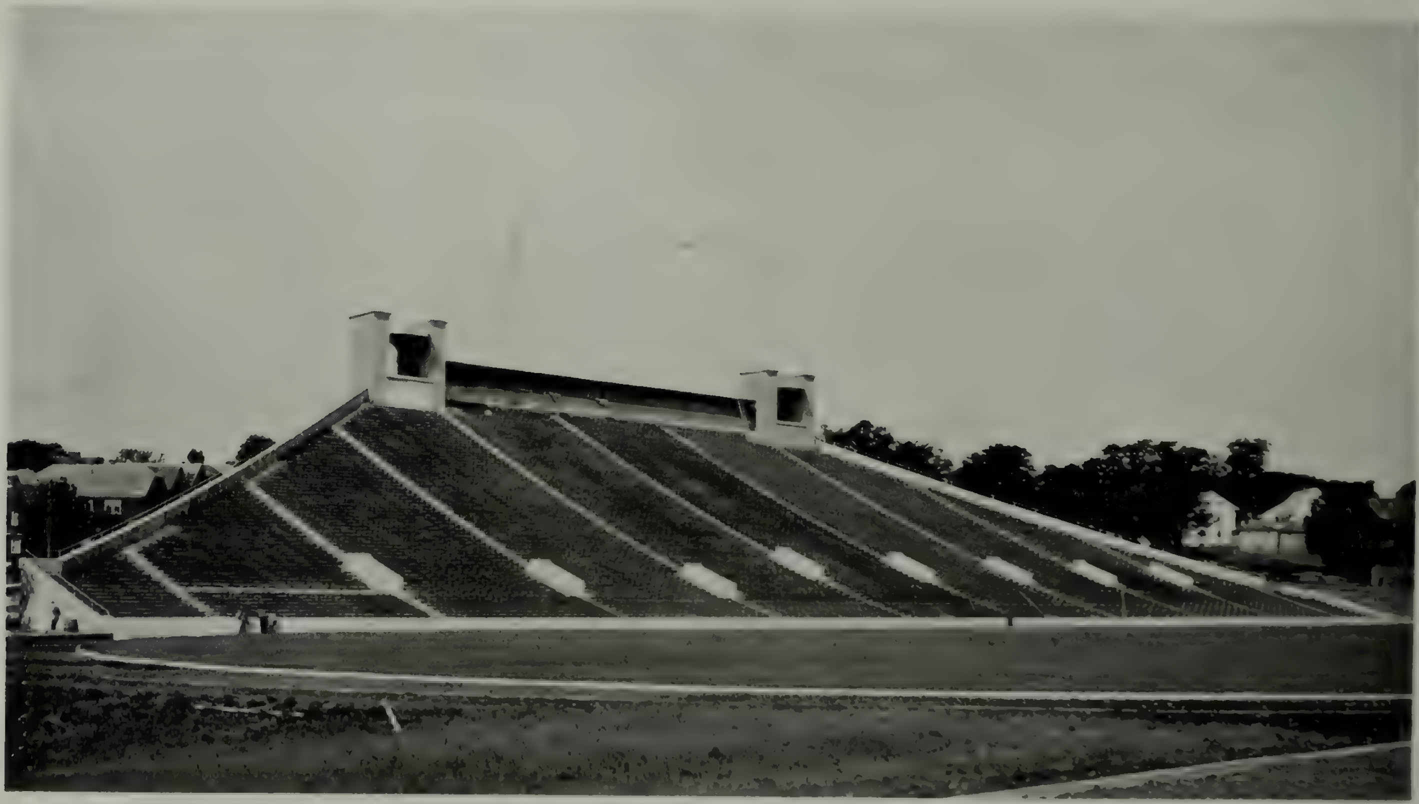
It is evident that both games are of approximately equal national importance and that stadiums designed to attract large crowds should provide adequate play area layouts for these games. The economy of designing a stadium to accommodate players and public for both football and baseball is obvious. Since the baseball play area is larger than the space for football, it is necessary to fit the football area into the baseball field, providing removable seating where needed, to adjust the seating area to the respective games. Good view is of fundamental importance to spectators and ample unobstructed play area is needed for the players. If baseball or football play occurs over the running track, the regulation track curbs may be omitted and the track graded continuous with the playing field.

SEATING AREAS

The seating area is the part of the stadium allotted to the spectators. This area is built generally as an ascending series of seat tiers.



DYCHE STADIUM, EVANSTON, ILLINOIS
JAMES GAMBLE ROGERS, ARCHITECT
GAVIN HADDEN, ENGINEER



BROWN STADIUM, PROVIDENCE, R. I.
PAUL P. CRET, CONSULTING ARCHITECT
GAVIN HADDEN, ENGINEER

Stands and Bleachers

By stands are meant that type of seating in which the entire deck construction is solid, the risers serving structurally to carry loads to inclined stringers and thence to columns and foundations to which the support framework is permanently attached. In stand construction the seats are fastened to treads or risers.

The term bleachers refers to that type of seating in which the riser space is left open, the load burden resting entirely upon treads which transmit loads to inclined stringers. Knockdown or portable bleachers are designed for easy dismantling for storage or removal to another location. Permanent bleachers are securely fixed to foundations. In bleacher construction the seats are fastened to the inclined stringers.

Permanent bleachers are used for seating when sufficient funds are not available for better construction. Portable bleachers are useful in providing extra seats for big games. They are necessary in the adjustment of the seating area in combination play fields. The best makes of bleachers are designed with structural steel support framework and wood treads, which should not exceed more than a 5-foot span between stringers.

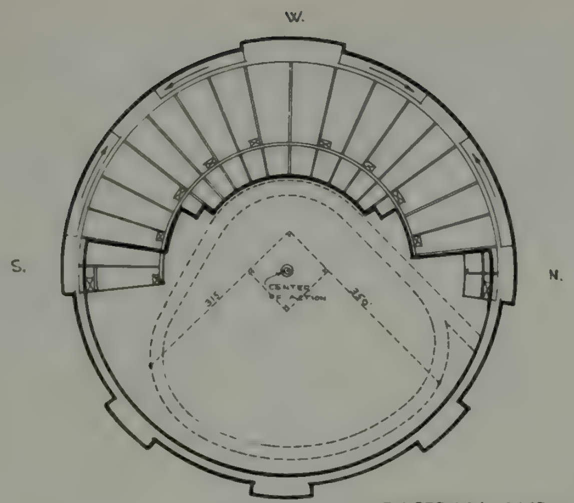
Stand decking may be built on an inclined cut or fill. When stands are roofed over, they are referred to as grandstands.

Stand Construction

The important factors in stand construction are seats, railings, facade, decking, support framework, fire resistance, stability, weather resistance, erection, and true cost.

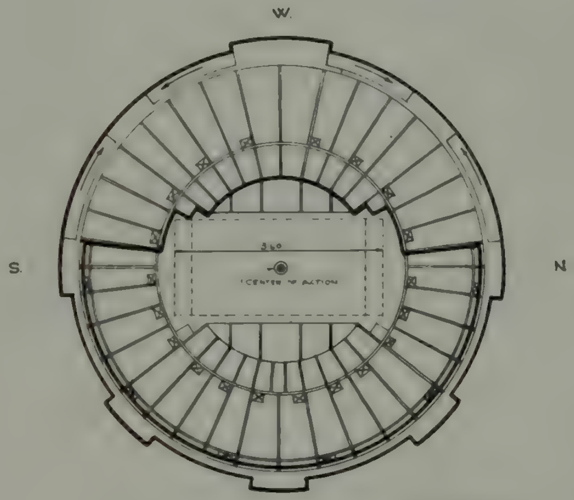
Seats. Commercial seating may be purchased from several large manufacturers who specialize in this work. These seats are fastened to the decking. They are often used for box and reserved sections of baseball stadiums and average about three dollars per person. This cost may be reduced by the use of built-up seats, which are attached to risers or treads. Comfortable seats are provided with backs and should be about 18½ inches in width. There should be ample leg room by allowing about 30 inches between rows. Sharp points that catch and tear clothing should be avoided. If seat brackets are attached to risers, the cleaning-up-after-games task is greatly facilitated.

Railings. Solid masonry railings are expensive and cut off light and ventilation. Pipe railings are more desirable. With wire mesh panels, they are placed around the outer perimeter and around vomitories. Double or single railings are needed at the inner perimeter and for separation of the various seat classifications. Mesh is usually 8-gauge crimped wire with channel or round frames. Pipe is 1½″ to 2″ with threaded or welded connections, preferably the latter.



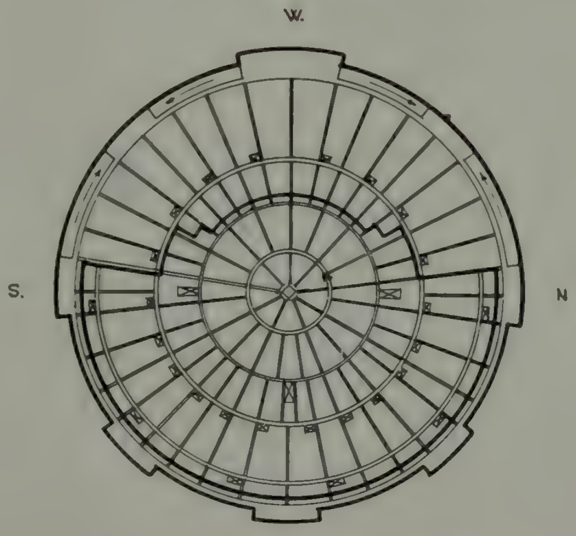
E.

BASEBALL AND TRACK



FOOTBALL

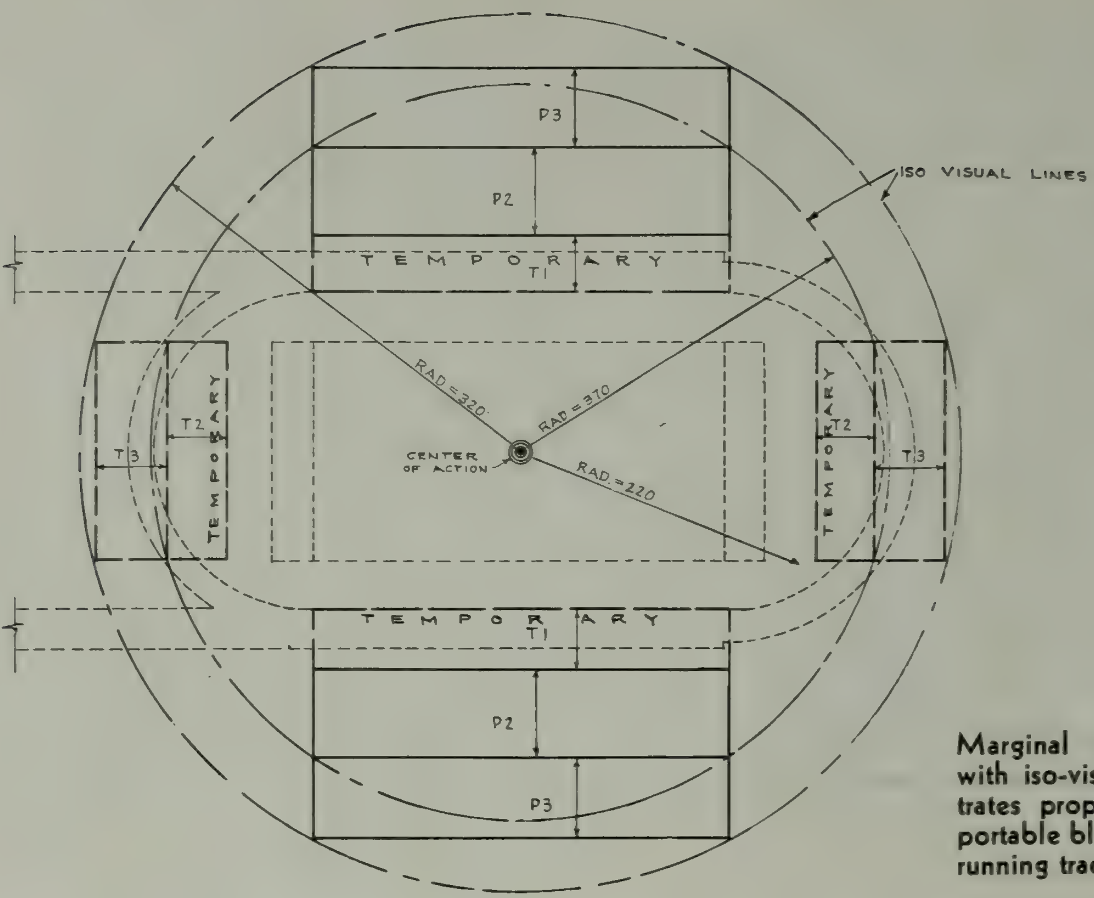
E.



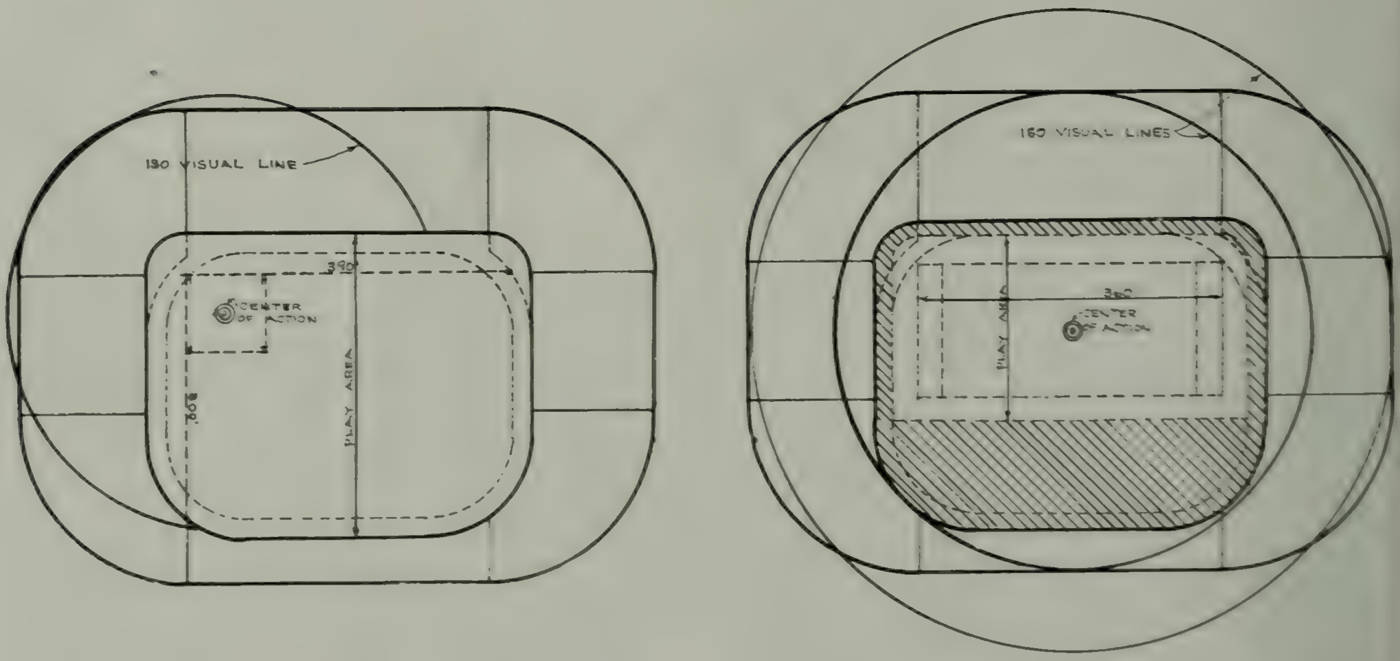
E

BOXING

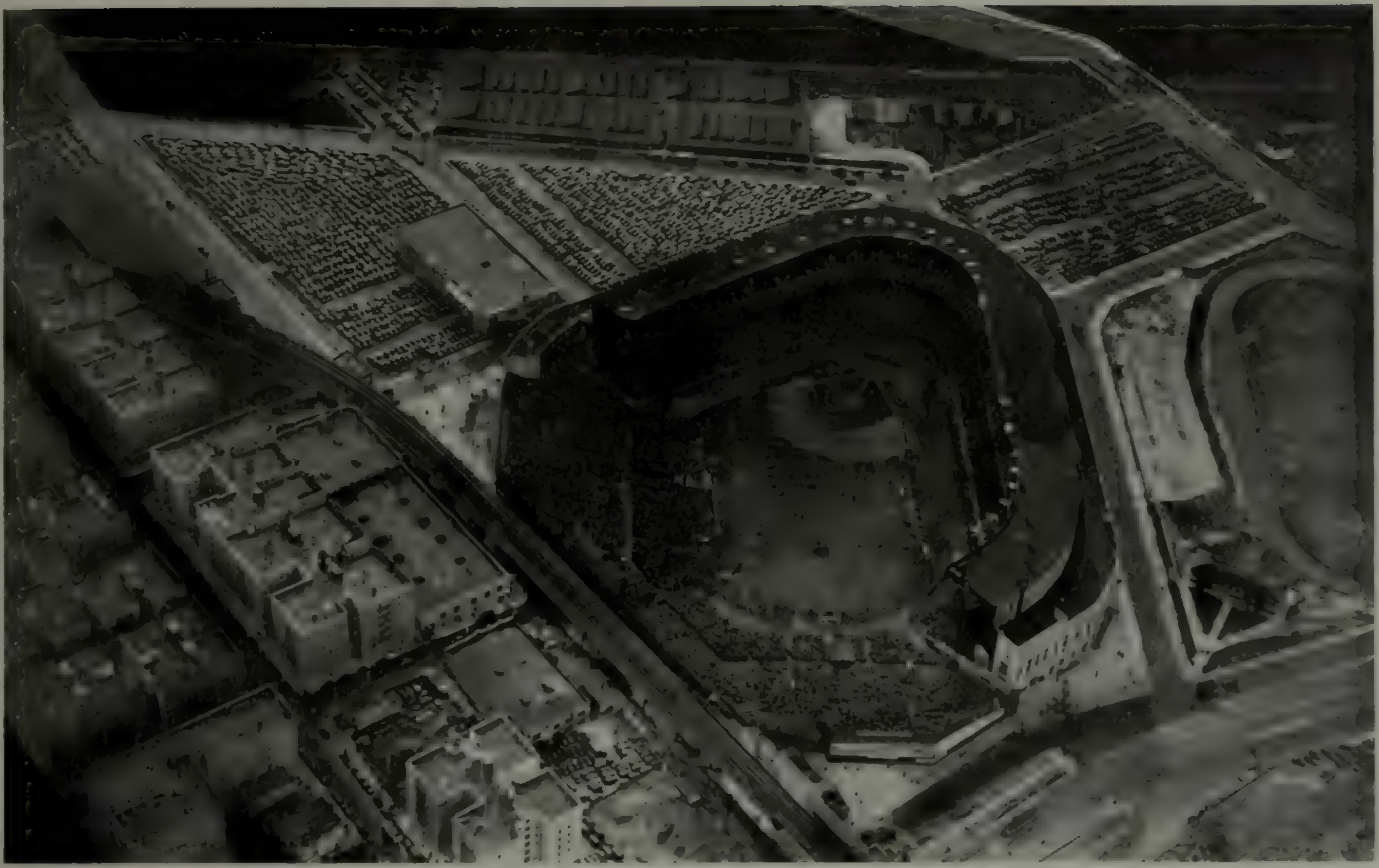
Municipal combination stadium designed for baseball, football, track athletics and boxing exhibitions. Marginal seats coincide with extreme iso-visual line, thereby assuring good view on iso-visual basis. The centers of action for baseball, football and boxing are at the center of the circle. Removable bleachers are an important feature of this design, prepared by Myron W. Serby, stadium consultant, for the Veterans Memorial Stadium at Jersey City.



Marginal seats should coincide with iso-visual lines. Sketch illustrates proper method of locating portable bleachers for football over running track.



Rectangular play area designed for baseball, track athletics and football. Removable bleachers definitely incorporated in the design. End zone football seats are inferior to sideline seats on iso-visual basis. This layout is not suitable for good view at boxing exhibitions.



Acme—P & A.

THE YANKEE STADIUM
NEW YORK CITY
OSBORNE ENGINEERING COMPANY

The parking problem is serious, as illustrated in this air picture of the stadium during a football game. A thousand or more cars could be accommodated by parking decks within the stadium.

Facade. The cost of a masonry facade with its huge arches and pylons is rarely justified if funds are limited. The money might well be spent for better or more seating, inside parking, floodlights, etc. A clean structural design of the facade will serve its major purpose in supporting and bracing the outer perimeter of the seating deck.

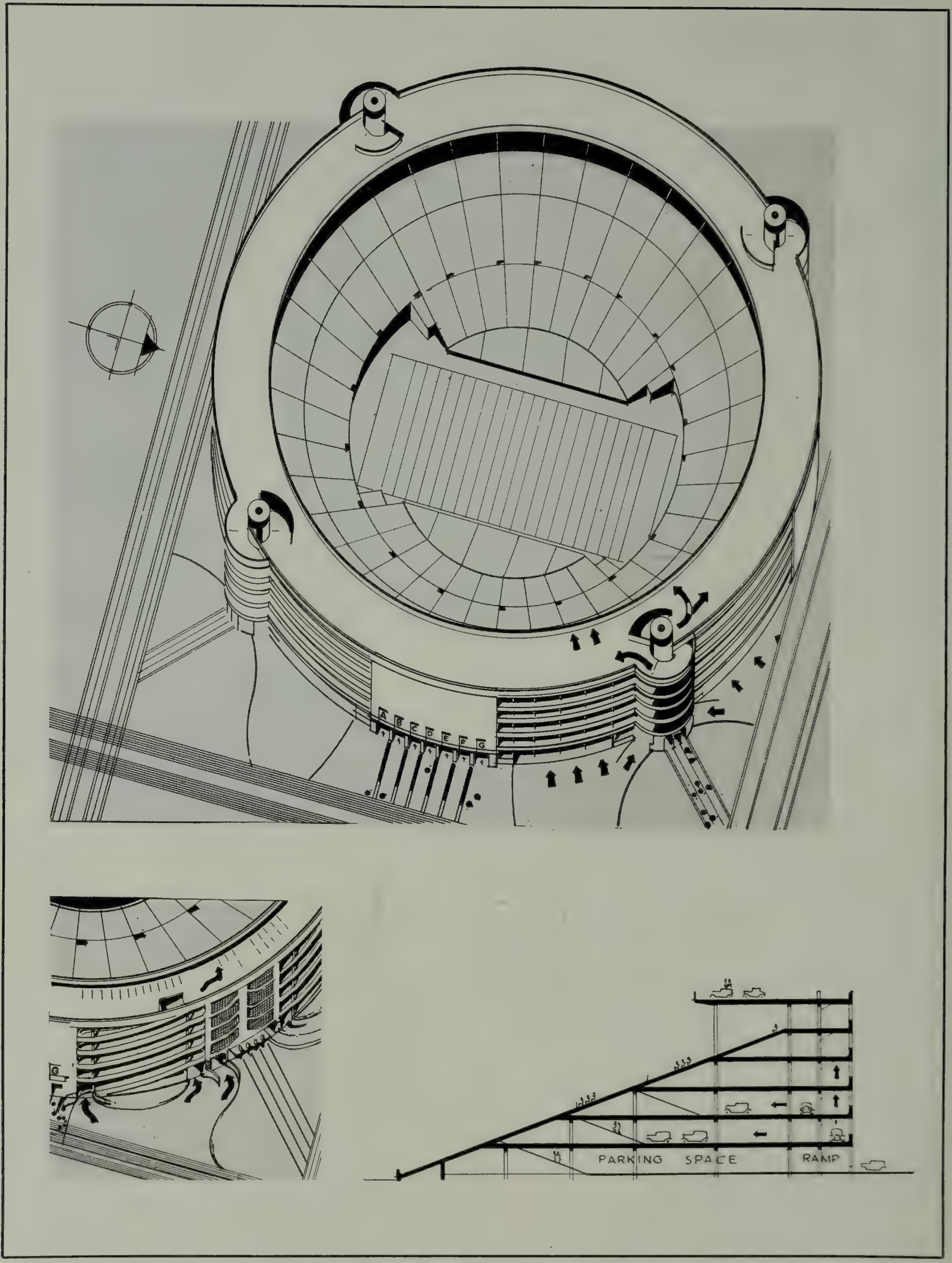
Decking. Treads and risers compose the decking. Many decks consist of monolithic reinforced concrete treads and risers. Treads may be of poured or precast concrete slabs on structural steel risers. A recent development is a monolithic construction in which both treads and risers are of structural steel. This battledeck construction consists of risers of built-up welded Z members supporting ¼″ steel tread plates at top and bottom flanges. The riser joists are delivered to the job with seat brackets attached. The plates are painted or surfaced with a finish of asphalt.

Support Framework. Unless site conditions favor cut-and-fill earth construction it is necessary to support the decking by means of structural framework, which may be of reinforced concrete or structural steel. In many stadiums the first eight or ten rows of decking are supported on earth fill. The structural design must consider all live and dead loads and must also provide against the lateral stresses due to crowd action.

Fire Resistance. This depends upon the percentage of wood used in the stands. Hence modern stadiums avoid wood for decking or support framework. Wood is used for seat slats and backs and for grandstand roofs.

Stability. This factor involves structural design. The decking should be designed to withstand, without sway or excessive vibration, a live load of 100 pounds per square foot vertically applied and a horizontal load of 8 pounds per square foot. All members of the support framework must be solid enough to carry maximum loads without sway or excessive vibration. Bracing and fastenings should be adequate. Where low bearing soil values obtain, requiring large spread footings or piles, light weight structural materials are economical and their use will avoid misgivings due to excessive settlement.

Weather Resistance. This involves cost of upkeep. Concrete deteriorates quickly if the utmost vigilance during construction has not been maintained. From season to season alternate contraction and expansion occurs from freezing and thawing. Precast concrete



STADIUM DESIGN WITH PROVISION FOR PARKED SPECTATORS
This scheme, developed by K. Lönberg-Holm and S. Washizuka, permits use of upper roof deck as space for parked spectators. Lower levels could be used similarly.
Upper drawing shows circular ramp arrangement utilizing the four corners of a square lot for automobile entrances. Lower drawing is an alternate arrangement incorporating straight-run ramps into the permanent stand construction.

slabs provide a multiplicity of expansion joints which eliminate cracking. They were first used on the Harvard stadium. Battledeck construction yields to foundation settlement without structural fracture and will take up temperature changes due to its inherent elasticity.

Erection. As with all modern structures, there is a growing tendency to design stands with a maximum of shopwork where manufacturing organization and equipment obtains. Under these conditions inspection is easily made, and field work greatly simplified and speeded up. This trend has entered the stadium field, leading to the use of fabricated structural steel for decking and support framework.

True Cost. This is the first cost plus the later charges for upkeep, i.e., maintenance and depreciation. The upkeep factor is of primary importance in stadium stand construction because the functional elements—the treads and risers—are exposed to weather the year round in contrast with floors of buildings which are enclosed.

Roofs

The use of roofs in connection with outdoor exhibition structures for the purpose of shading spectators from the sun dates back to Roman times. Great awnings were used to shade the stands of the Coliseum. They were adjusted by means of ropes fastened to the parapet.

Roofs are a necessity during the baseball season, and are also required for press and broadcasting accommodations during the football season. Roof location and width must be designed to provide shade for the entire section of grandstands. (See *Orientation.*)

Multiple Decks

Multiple decks are usually built in connection with stadiums on expensive land. While they bring the spectators nearer to the play, they are usually deficient as to good view clearance. Most rear seats under the decks do not afford a good view of high flies in baseball. A further difficulty arises from the need for ramping crowds to the upper decks, involving increased construction costs. In most cases single decks are more economical and efficient. Before a decision is made as to single or multiple decks, alternate designs and estimates should be prepared and considered in connection with good view, land costs, and relative total costs.

Parking Decks

The automobile parking problem promises to increase in seriousness. Those who have driven to large games will remember keenly the inconvenience and discomfort involved. If half the patrons come in cars, one acre of parking space is needed for each three thousand stand capacity. The large stadium requires ten acres or more of parking space.

A portion of this required space may be supplied by parking decks below the seating deck where there is a vast volume of waste space which can be utilized profitably in this manner. Ramping arrangements are easily provided, the net result being a further addition to public comfort and convenience.

Parked Spectators

A further concession to public convenience provides for parking aisles on the stadium decks. Seated in their cars with a good view of the playing field, these spectators would be located behind the seated patrons or on the roof. It is necessary to have a wide aisle around the perimeter and the necessary ramps from parking decks below.

Good View

The successful stadium is designed to serve the public. Of all the factors that contribute towards this end, that of providing for spectators a good view of all points of interest on the play area is most important. Good view requires that spectators enjoy nearness to the attraction and clearance or freedom from obstructions. The plan of the seating area determines nearness; the slope of the seating deck determines clearance.

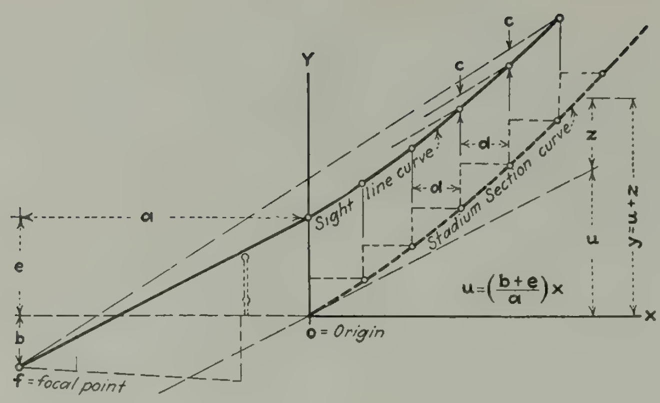
The Nearness Factor of Good View. The inner perimeter of the seating area is the outer perimeter of the play area. Obviously, seating on this perimeter is most desirable from the point of view of the spectator who wishes to see the attraction as near as possible to the field of action.

The center of action in the football play area is in the exact center of the 50-yard line. In the baseball play area, this center is the center of the diamond.

From these considerations it is evident that spectators, seated along the arc of a circle with center at the center of action, will derive nearly equal satisfaction in witnessing these games, other things being equal. This arc is usually referred to as the iso-visual line. These iso-visual lines are concentric and may not coincide with the layout of the rows of seats.

The marginal seats are those along the outer perimeter of the seating area. They are the least desirable when judged from the factor of nearness. Most football stadiums are provided with marginal seating of widely varying degrees of spectator satisfaction. Seats behind the end zones are much less desirable than marginal seats opposite the 50-yard line at the center of attraction.

In a well-proportioned seating plan, the marginal seats should coincide with the iso-visual line. This means that the marginal spectators will be nearly equidistant from the center of attraction and will derive approximately equal satisfaction on the basis of nearness.



DESIGN DATA FOR DETERMINING STADIUM SECTION CURVES:

Values of z in feet from Formula:

$$z=(0.46)\ (a+x)\ \log_{10}\left(\frac{x}{a-1.25}+1\right)$$

See diagram on opposite page. For other values of a and d, apply coefficients from table opposite. Values of z in feet for different values of a and x when c = 0.50 feet and d = 2.50 ft.

TABLE 1

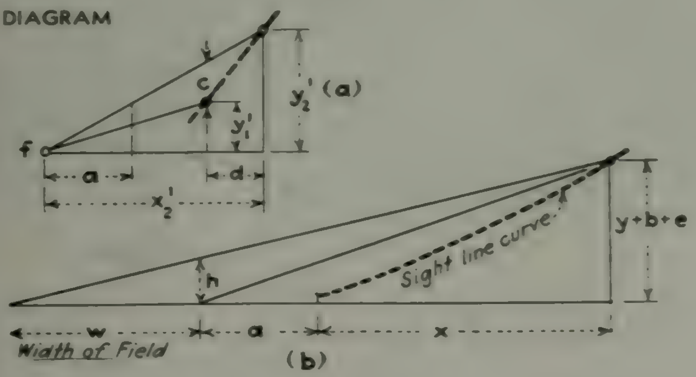
x Ft.	Values of *a* in Feet																*x* Ft.
	20		40		60		80		100		200		300		400		
		diff.		diff.		diff.		diff.		diff.		diff.		diff.		diff.	
0	0.00		0.00		0.00		0.00		0.00		0.00		0.00		0.00		0
		2.56		2.30		2.20		2.15		2.12		2.06		2.04		2.03	
10	2.56		2.30		2.20		2.15		2.12		2.06		2.04		2.03		10
		3.24		2.69		2.49		2.38		2.31		2.16		2.11		2.08	
20	5.80		4.99		4.69		4.53		4.43		4.22		4.15		4.11		20
		3.75		3.04		2.74		2.57		2.47		2.25		2.17		2.13	
30	9.55		8.03		7.43		7.10		6.90		6.47		6.32		6.24		30
		4.15		3.31		2.96		2.76		2.62		2.33		2.22		2.17	
40	13.70		11.34		10.39		9.86		9.52		8.80		8.54		8.41		40
		4.48		3.57		3.16		2.92		2.77		2.42		2.29		2.22	
50	18.18		14.91		13.55		12.78		12.29		11.22		10.83		10.63		50
		4.77		3.79		3.33		3.08		2.90		2.50		2.35		2.27	
60	22.95		18.70		16.88		15.86		15.19		13.72		13.18		12.90		60
		5.02		3.99		3.51		3.22		3.03		2.57		2.40		2.30	
70	27.97		22.69		20.39		19.08		18.22		16.29		15.58		15.20		70
		5.24		4.18		3.66		3.35		3.14		2.65		2.45		2.35	
80	33.21		26.87		24.05		22.43		21.36		18.94		18.03		17.55		80
		5.45		4.34		3.81		3.48		3.26		2.73		2.51		2.40	
90	38.66		31.21		27.86		25.91		24.62		21.67		20.54		19.95		90
		5.62		4.50		3.94		3.60		3.36		2.78		2.56		2.43	
100	44.28		35.71		31.80		29.51		27.98		24.45		23.10		22.38		100
		5.79		4.62		4.06		3.70		3.46		2.86		2.61		2.47	
110	50.07		40.33		35.86		33.21		31.44		27.31		25.71		24.85		110
		5.95		4.78		4.18		3.81		3.55		2.92		2.65		2.51	
120	56.02		45.11		40.04		37.02		34.99		30.23		28.36		27.36		120
		6.09		4.89		4.29		3.91		3.65		2.99		2.71		2.55	
130	62.11		50.00		44.33		40.93		38.64		33.22		31.07		29.91		130
		6.22		5.02		4.40		4.01		3.73		3.04		2.75		2.59	
140	68.33		55.02		48.73		44.94		42.37		36.26		33.82		32.50		140
		6.35		5.13		4.50		4.10		3.82		3.10		2.80		2.63	
150	74.68		60.15		53.23		49.04		46.19		39.36		36.62		35.13		150
		6.46		5.22		4.59		4.17		3.90		3.16		2.84		2.66	
160	81.14		65.37		57.82		53.21		50.09		42.52		39.46		37.79		160
		6.58		5.33		4.68		4.28		3.97		3.22		2.88		2.69	
170	87.72		70.70		62.50		57.49		54.06		45.74		42.34		40.48		170
		6.68		5.42		4.77		4.35		4.05		3.27		2.93		2.73	
180	94.40		76.12		67.27		61.84		58.11		49.01		45.27		43.21		180
		6.78		5.52		4.86		4.42		4.12		3.32		2.97		2.77	
190	101.18		81.64		72.13		66.26		62.23		52.33		48.24		45.98		190
		6.87		5.61		4.94		4.51		4.19		3.37		3.01		2.80	
200	108.05		87.25		77.07		70.77		66.42		55.70		51.25		48.78		200
		6.97		5.68		5.01		4.57		4.25		3.43		3.05		2.84	
210	115.02		92.93		82.08		75.34		70.67		59.13		54.30		51.62		210
		7.06		5.76		5.09		4.64		4.32		3.47		3.09		2.86	
220	122.08		98.69		87.17		79.98		74.99		62.60		57.39		54.48		220
		7.14		5.85		5.15		4.71		4.39		3.52		3.13		2.90	
230	129.22		104.54		92.32		84.69		79.38		66.12		60.52		57.38		230
		7.21		5.92		5.23		4.77		4.44		3.57		3.16		2.93	
240	136.43		110.46		97.55		89.46		83.82		69.69		63.68		60.31		240
		7.30		5.99		5.29		4.83		4.50		3.61		3.21		2.96	
250	143.73		116.45		102.84		94.29		88.32		73.30		66.89		63.27		250

COEFFICIENTS FOR OTHER VALUES OF c AND d

TABLE 2

d Ft.	Values of c in Feet							
	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65
2.00	0.748	0.873	0.997	1.122	1.246	1.371	1.495	1.620
2.08	0.718	0.838	0.957	1.077	1.196	1.316	1.435	1.555
2.17	0.690	0.805	0.920	1.035	1.150	1.265	1.380	1.495
2.25	0.665	0.776	0.886	0.997	1.108	1.219	1.329	1.440
2.33	0.642	0.749	0.856	0.962	1.069	1.176	1.283	1.390
2.42	0.619	0.723	0.826	0.929	1.032	1.136	1.239	1.342
2.50	0.600	0.700	0.800	0.900	1.000	1.100	1.200	1.300
2.58	0.581	0.678	0.775	0.872	0.969	1.066	1.162	1.259
2.67	0.564	0.658	0.752	0.846	0.940	1.033	1.127	1.221

DIAGRAM



This principle indicates that the ideal outer perimeter of the seat area is a circular arc. The Greeks employed this in their theatres and our modern theatre design is based on precisely the same reasoning. But recent stadium designers seem to have overlooked this factor, following the lead of the Greek stadium designers who likewise provided parallel inner and outer seating area perimeters, probably for the reason that large capacities were not required.

Large stadiums having capacities up to 125,000 or 150,000 should be carefully planned to insure a maximum number of good view seats on a nearness basis.

Visual Clearance Factor of Good View. For any stadium section, the position of a spectator seated in the first row largely determines the design. The sight line curve, an assumed smooth curve passing through the eyes of spectators up the section, is fixed as to locus by the elevation of the eyes of the first spectator with relation to a definite focal point on the field taken as the origin. The focal ray of each spectator clears the eyes of each spectator immediately below by a vertical distance "c". Although oblique sections are often investigated in stadiums, the section design is based on a section taken normal to the inner perimeter of the seating area.

Taking "e" as the vertical measurement from floor to eyes of the average seated spectator, and changing the origin of the curve from the field focal point to a new origin at the base of the first riser, we obtain by transformation the corresponding stadium section curve, which can be used directly to lay out the treads and risers. Table 1 gives data for plotting the section with given values of "a" and "x". In this table the tread width is taken as 30 inches and the "c" value as 6 inches. For other values of tread width and clearance, Table 2 gives multipliers.

Discussion of the *Clearance Formula Constants* is given herewith:

"a"

The "a" or sight distance is taken as the distance from first row to the nearest point of play interest. In football this is the distance from first row to sidelines. In baseball it is the distance from first row to catcher or to foul lines, whichever is nearer. In track it is the distance from first row to center of track, the focal point being taken at the runner's waist height or 3 feet above grade. This involves consideration of the "b" factor.

"b"

This constant represents the vertical distance from focal point to first tread of the seating deck. It may be a negative quantity when the focal point is above the first tread. This condition occurs when the focal point is the boxing ring elevated above grade. In multi-deck stadiums, the "b" constant is of major importance. In football stadiums this distance is 2 to 3 feet. This rise above grade provides for the installation of removable bleachers in front of the permanent stands and over the running track.

"c"

The "c" or clearance constant is the measure of visual clearance, defined as the distance vertically

C. Moulin from Galloway

MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA
JOHN GALEN HOWARD, ARCHITECT
E. E. CARPENTER, CONSULTING ENGINEER

from a spectator's focal ray to the eyes of his preceding neighbor. For ideal clearance, this value is 6 inches when heads are covered and 4 inches for uncovered heads as in theatres. When these "c" values obtain, there is absolute clearance from row to row. Absolute clearance is easily provided in stadiums of small capacities. In large stadiums having fifty to a hundred rows of seats the calculated heights of the structures exceed reasonable limits. Under these conditions clearance is limited and requires spectators to look between the heads and over the shoulders of preceding neighbors.

In most large stadium designs it is necessary to adopt limited clearance values, which should be fairly uniform for all seats. Spectators will then have a good view of the attraction, except when the action is near the seating area inner perimeter.

The investigation of the value of "c" is of the utmost importance when a stadium design requires seating accommodations for baseball, football, and boxing. Especial attention should be paid to the clearance of seating between ringside and stands.

"d"

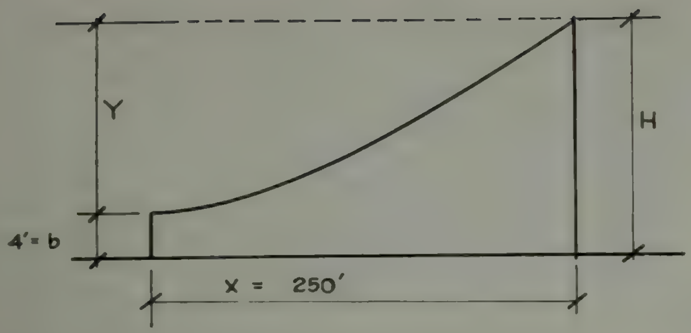
This is the width of treads or back to back distance between seats. Seats with backs should be on 30-inch rows, without backs on 28-inch rows.

"e"

This constant is the height of a spectator's eyes above the tread. As most stadiums are designed for seated spectators, this value is taken as 4 feet. It is interesting to note that many European stadiums, notably that at Wembley Park in London, provide for standing spectators. At Wembley Park over 90,000 standees lean against pipe railings provided for the purpose. In this case the proper "e" value is the standing height from tread to eyes, an increase which requires increased slope of the seating deck.

Example: to determine the maximum height of a section consisting of 100 rows at 30 inches, first tread being 4 feet above field grade. We have the following constants:

a.	100 feet	(assumed)
b.	4 feet	(given)
c.	6 inches	(assumed)
d.	30 inches	(given)
e.	4 feet.	(assumed)



H (total height) equals y plus 4 feet (b)

$$y = u + z$$

$$u = \left(\frac{b+e}{a}\right) x = \left(\frac{4+4}{100}\right) 250$$

$$= 20 \text{ feet}$$

$$z = 88.32 \text{ feet}$$

$$y = 108.32 \text{ feet}$$

$$H = 102.32 \text{ feet}$$

The designer may desire to reduce this total height to 90 feet, or a cut of practically 22 feet. This is 25% of the z value derived above. The section is therefore computed on a basis of 75% of the values given in the table for a = 100 feet and d = 30 inches. On this basis the calculated "c" value for the above value of "a" and "d" is 75% of 6 inches or 4½ inches, which is limited clearance. It may be seen from the table that for absolute clearance of 6 inches the final design indicates an "a" value of about 200 feet.

ACCESS AND EGRESS

Site

Selection of the proper site involves consideration of accessibility, ample area, neighborhood, grading and foundation conditions. Accessibility requires that there exist present or potential transit facilities and ample paved thoroughfares for motor traffic without bottlenecks. If the site is quickly and easily reached, it may be located beyond the outskirts of the city. Here land costs are usually low and may be sold at a profit when the site greatly increases in value in the future.

The modern stadium requires area for the stadium proper as well as parking space for the public. Allowing one acre of parking for each five thousand capacity, the fifty thousand capacity stadium will require ten acres. Parking decks in the stadium will relieve a portion of this requirement, but the larger part of the large stadium parking will necessarily require outside space. If public convenience is considered, the practice of compelling motorist patrons to park dozens of blocks away from the stadium and in miscellaneous side yards is greatly to be deplored.

The stadium proper will require from 5 to 15 acres and upwards depending on capacity. To provide a certain degree of landscaping, there should be some area outside the enclosure to dignify the structure.

The selection of neighborhood creates a problem that has prevented the realization of many stadium projects. This matter of realty technique should be left to experts who fully appreciate the effect of a stadium on its environment. The problem is no more difficult than that of choosing sites for schools or playgrounds.

Preliminary test holes or core borings should furnish foundation information. A topographical survey should be made in this connection and all this information used in the preparation of the estimate. Many preliminary stadium estimates have gone wrong due to lack of knowledge of grading and foundation conditions, including drainage problems. If the site is favorable for a cut-and-fill stadium, alternate estimates may be made against the structurally supported type. In investigating the cut-and-fill design, due consideration should be given to drainage cost, pumping, etc., and the need for sheltering crowds in case of rain.

Entrances and Ticket Booths

The stadium crowd enters during a relatively long period, i.e., one-half hour to an hour. The rate gradually increases toward the start of game. A good ticket seller can handle from 1,500 to 2,000 sales per hour. Each booth shelters two sellers and will require two aisles. The booth requirements will therefore determine the width of the entrances. For the peak crowd games temporary booths may be located at some of the exits. Usually separate entrances are provided for bleacher crowds. If the stand crowds are divided into box section, reserved and unreserved, suitable guarded railings inside the entrances will shunt them into their respective primary channels of distribution under the stands.

Ramps, Portals and Exit Gates

The primary channels of distribution consist of the aisles at grade under the decks, together with the ramps leading to their respective portals or vomitories. These channels should not include steps which are dangerous under stadium conditions.

Ramps should be non-skid surfaced and sloped one to four-and-a-half or five, with landings at 15- to 20-foot levels. The width of ramps, portals and exit gates should be interrelated. This width depends on the exit requirements. It is advisable to base these requirements on a 5-minute exit of the entire crowd. On this basis a 10,000 crowd will require 80 lineal feet of ramp, portal or exit gate width. This is on an assumption of 3 feet square walking space for each person, traveling at 3 miles per hour, with a factor of safety of two. Using these figures, a 10-feet wide vomitory will take care of 1,250 people. If the vomitory allowance is smaller than

Kurt Grimm

STADIUM AT NUREMBURG
OTTO SCHWEIZER, ARCHITECT

that for ramps and exits, the crowd will bottleneck at the vomitory during egress.

Careful study should be given to the location and design of these three elements. At many stadiums the crowd is permitted to exit across the playing field. This greatly decreases any hazards arising from panics and mad rushes which often occur in the excitement of athletic competition.

Longitudinal and Transverse Aisles

These are the secondary channels of distribution, leading the crowds from the vomitories to their seat rows. Longitudinal aisles are provided from vomitory to vomitory and should be at least 5 feet in width. There should be at least two: one between the box section (or front section of 8 or 10 rows) and the reserved seating, and one at the rear of the seating. Some designs indicate longitudinal aisles in front of the seating at grade and also an additional intermediate longitudinal aisle between the lower aisle and the outer perimeter.

In this connection it should be understood that aisles obstruct view when late comers are moving to their places, and there should therefore be as few aisles as possible. For this reason the marginal rear aisle is desirable and it may also be used for standing room at peak games.

Transverse aisles extending up the deck are usually spaced 30 to 50 feet apart. When riser heights exceed 9 inches intermediate steps are required. It is desirable for safety that all runs be uniform. Therefore intermediate treads and risers should be half the dimensions of main treads and risers, i.e., when main treads and risers are 10 inches and 30 inches, the step blocks should be 5 inches by 15 inches. The usual width of transverse aisles is 3 feet.

STADIUM EQUIPMENT AND CONVENIENCES

The total cost of the stadium includes the cost of the land required for the stadium proper and outdoor parking space plus expenditures for preparing surfaces for use, the cost of the permanent and removable seating, and the cost of the remainder of the items necessary to complete the project. This remainder is termed stadium equipment and conveniences. The following discussion covers the major items involved in this classification:

Public Toilets

Modern toilet facilities include as additions to the plumbing fixtures such accommodations as smoking and lounge rooms, public telephones, and the like. One authority estimates the following fixtures are required: for each one thousand men 1 toilet and 6 urinals, for each one thousand women 7 toilets. The buildings should be easily accessible to the seating decks and designed for light, ventilation and frequent cleaning.

Team Quarters

Team quarters are often referred to as field houses and are provided for home and visiting teams, preferably in different buildings. There should also be accommodations for field officials. Team rooms are furnished with 6 to 8 showers, 2 toilets and 4 urinals,

Karl Gramm

STADIUM AT NUREMBURG
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together with rubbing tables, lockers, clothes-drying equipment, fans, etc. Most team quarters should be heated.

General Offices

General offices are provided when the operating management is housed at the stadium. It is desirable to locate these offices above or near the main entrance so that money from ticket sales can be safely taken to the cashiers through openings in the office floor or by means of pneumatic tubes.

Concession Accommodations

Catering to stadium crowds who consume enormous quantities of food and drink is very profitable. Concessionaires pay from 5 to 10 cents per admission for the privilege of exclusive handling of concessions. Thus a stadium handling an annual capacity of one million will receive from $50,000 to $100,000 in concession income. This amount often pays the annual interest charge on the entire stadium investment, and therefore justifies the expenditure of amounts required for cushion and refreshment booths and commissary quarters. It is desirable that all buildings and major equipment required for concessions be built and owned by the stadium authorities or owners. Thus the location and design of the booths and the commissary will fit in with the general design of the stands. It is advisable to consult concessionaires in this matter before proceeding with preparation of final plans. The commissary quarters are used for storage of goods, their preparation and distribution to salesmen, and include equipment for bottled wares, peanut cabinets, tobacco humidor cabinets, refrigeration and toilets.

Miscellaneous Quarters

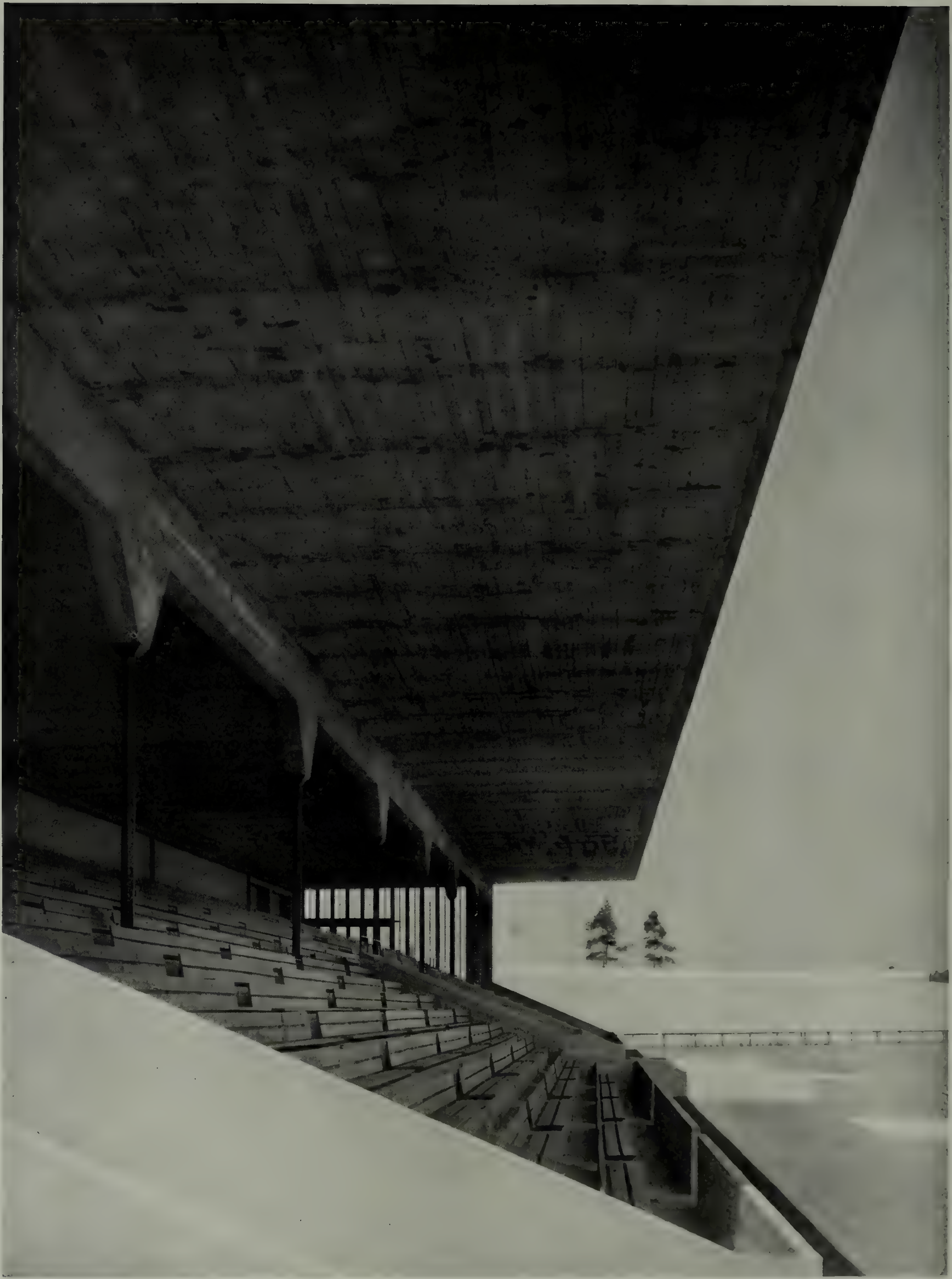
Quarters should be provided for the storage of athletic paraphernalia, paints, lime, cleaning equipment, etc. Space is also required for the grounds superintendent's office.

Press and Broadcasting Accommodations

Adequate press and broadcasting accommodations are equally as important as those for concessions. The modern stadium is a big amusement business which has been made possible by the intense public interest created and maintained by newspapers and radio broadcasting organizations.

At important games as many as five hundred writers and reporters from all parts of the country must be accommodated. A dozen or more represent news services and send their copy directly to their offices by means of telegraph instruments at their desks in the stadium press stands. A greater number use telephones which are furnished for their use in transmitting the progress of the game. The telegraph and telephone men should be allotted preferred space in the press stands. In addition to these two classes of press-stand occupants is a third class of individual writers who represent large newspapers. These take notes during the game or typewrite their matter as the play progresses.

Facilities should be provided for the still photographers who represent the picture news services. There are also a number of crews of motion picture



Kurt Grimm

STADIUM AT NUREMBURG
OTTO SCHWEIZER, ARCHITECT

photographers, together with the sound crews. Finally space, preferably glass enclosed, should be allotted for broadcasters.

These quarters should be well isolated from the crowds but should afford a good view of all parts of the field. Where there is a grandstand roof, the press and broadcast facilities may be located at the inner perimeter as near as possible to the baseball 50-yard line or the home base in baseball games.

In designing these accommodations, it is advisable to consult with officials of sports writing associations, telegraph companies, telephone offices and broadcasting organization. Sound equipment is heavy and requires study as to the loads involved. The publicity men should be furnished with well heated and ventilated quarters, with toilets and drinking water.

Scoreboards

Scoreboards should be designed so that game information is visible from all parts of the seating area. Large electrically operated scoreboards may be leased or purchased from firms which specialized in this equipment. For small projects hand-operated boards are satisfactory. Game information is given on metal plates, suspended from hooks or revolved by hand pulleys.

Signs and Lettering

Easily read signs should indicate direction to portals, toilets, etc. While unnumbered seats, if continuous, will hold a greater number by packing, it is advisable from the standpoint of public comfort to number each seat. Numbers may be stenciled or burned into back rests, or stenciled on the risers if there are no backs. Metal numbers on back rests are uncomfortable.

Floodlighting

The usefulness and income of a stadium may be greatly increased by efficient floodlighting equipment. The lights should be designed and located for maximum light with minimum glare. The year 1930 was the first in which this feature of stadium operation was tried out on a large scale. Many stadiums have been equipped and the results are very promising.

A large stadium will rquire from 150 to 200 kilowatts to illuminate the field. Allowing 4 hours of night operation at 5 cents per k.w.h., this cost varies from $30 to $40 an evening. With illumination of stands and wear of lamps the total cost will probably range from $50 to $100 an evening.

FENCES, GATES AND OTHER ELEMENTS

Since a charge is universally made for admission to stadiums, a high fence is a necessity where no enclosing walls exist. These fences may be of woven wire with barbed wire or cut wire tops if the stands cut off the view of the field from the outside. Otherwise solid fencing must be used. Most baseball clubs augment their income by selling advertising

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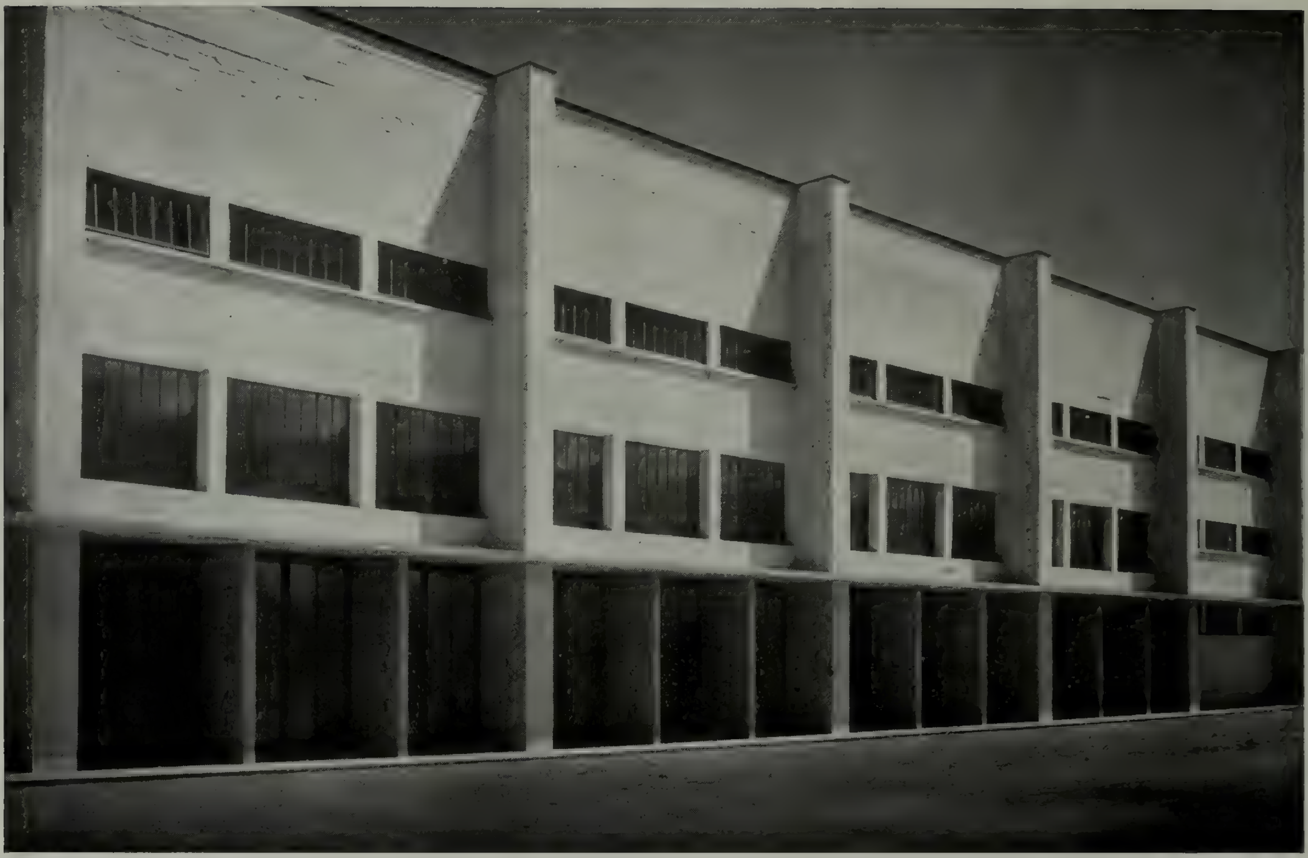
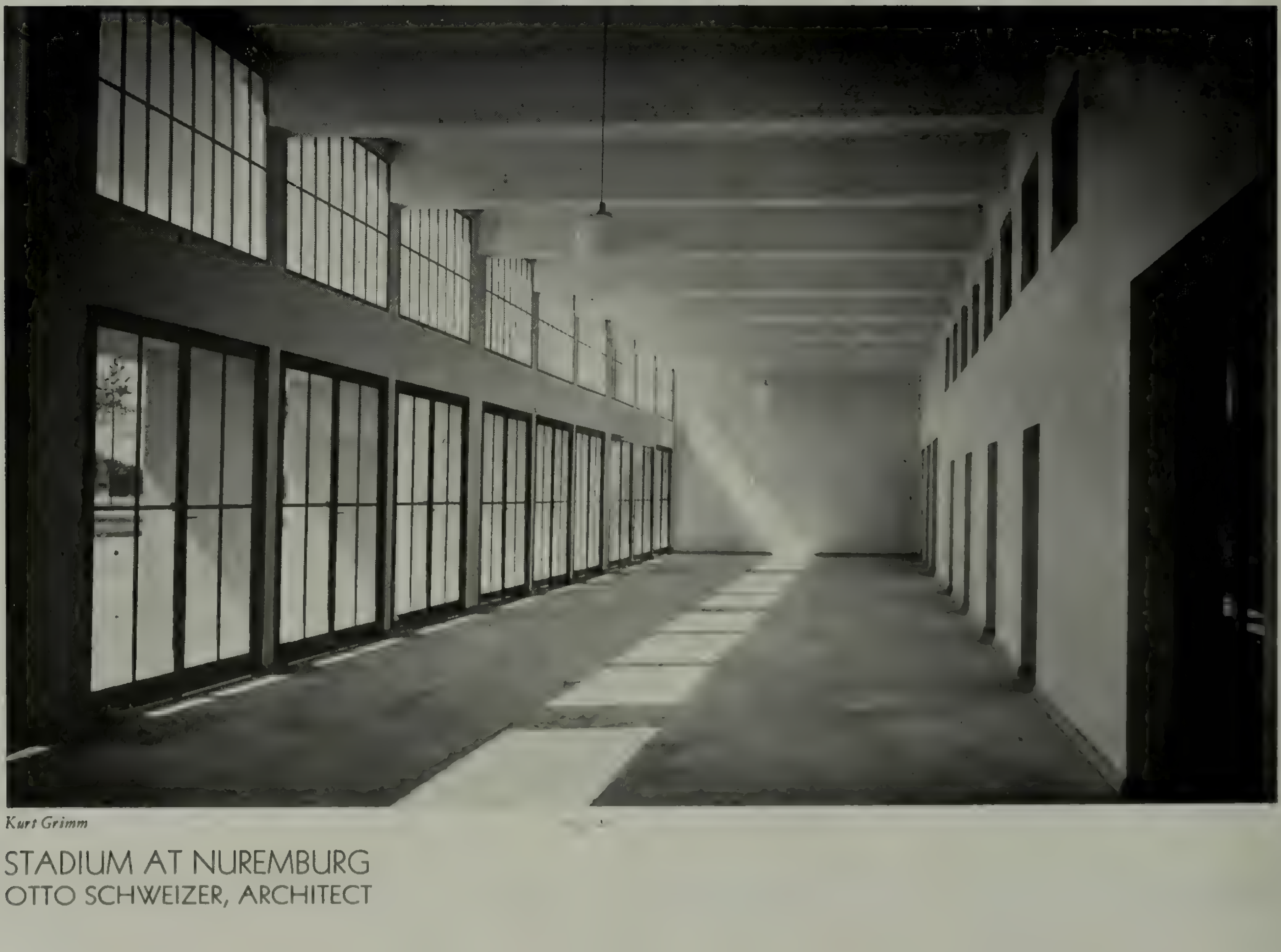


Kurt Grimm



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space on the inside surface of 9- or 10-foot high fences which are lined inside with metal walls or plates. Masonry fences are expensive and funds ordinarily appropriated for this purpose might be better employed to provide more comfortable seating or greater capacity. Fences are also required for the separation of the various crowd classifications along the primary channels of distribution.

Although sliding gates or rolling shutters are commonly used, swinging gates are more economical and just as efficient.

Flagpoles. Flagpoles are used around the upper perimeter of the facade, at about 100-foot centers. They are often clustered at entrances. They are one form of expression of the gala atmosphere of outdoor attractions. In addition to these small poles of 10- to 20-foot heights the baseball club will require a large flagpole in center field 85 to 100 feet in height. This pole flies the pennant flag if and when it has been won by the home team.

Protection Nets for Baseball. To protect spectators from foul balls, netting of wire or well-tarred cotton thread is necessary. These nets shield the spectators in the vicinity of home base and extend from the inner perimeter of the seating area to the upper deck or roof above. The stands beyond the diamond may be protected by 8-feet high netting.

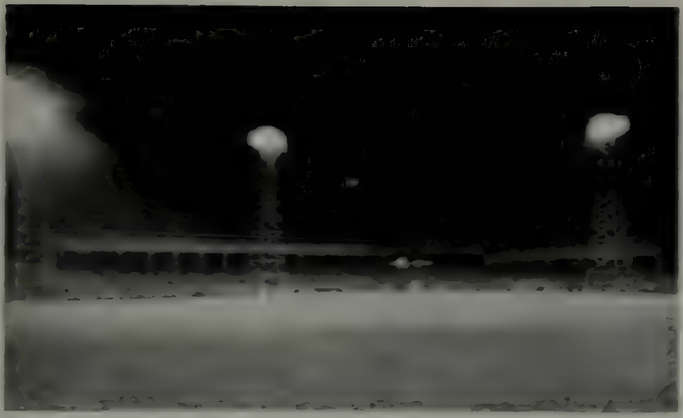
Turnstiles. Most concessionaires pay privilege fees based on the turnstile records of attendance. This count is greater than seat sales because of the free pass holders, press representatives and others. Non-recording or recording types, preferably the latter, are used.

Emergency Quarters. For handling accident cases among spectators there should be a private room well isolated from the primary channels of distribution under the stands and preferably in the general office building. It should be equipped with couches, stretchers, medical kits and other necessary items.

Taxi and Telephone. A place for the taxi starters should be provided at points which will not interfere with outgoing pedestrian traffic. Public telephones should be available in all parts of the stands and in public toilets.

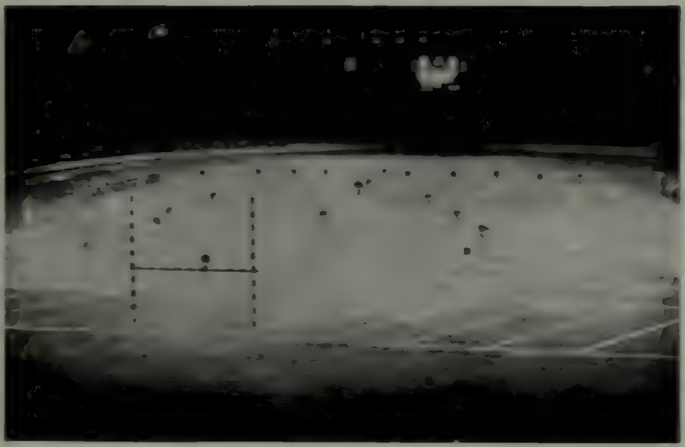
Mechanical Trades. Hose connections are necessary for fighting fire and watering the playing field. Heat and hot water are required for the players' quarters and other rooms. As in all building work the mechanical design and specifications should be prepared by a competent mechanical engineer. The mechanical installation includes plumbing, heating, ventilating, electrical work, refrigeration, concession equipment, etc.

Playing Equipment. The furnishing of the various accessories required for football, baseball, track and other events is not included in the stadium building work. Such items are back stops, base bags and other portable items which are furnished by the stadium users or the operating management.



G. E. Illuminating Engineering Lab

WASHINGTON BASEBALL PARK
INDIANAPOLIS



Crouse-Hinds Co.

FLOODLIGHTING A FOOTBALL FIELD
SYRACUSE, NEW YORK

Galloway

PRESS STAND AT YALE BOWL
NEW HAVEN, CONNECTICUT

CHECKING LIST OF STADIUM REQUIREMENTS

A. PRELIMINARY

1. *Surveys:* Aerial photos and topographical survey with complete data on water mains, sewers, gas lines, electric current, fire department requirements, streets, etc.

2. *Test borings and water table.*

B. PREPARING SITE

1. *Rough grading:* Balance cuts and fills. Locate top soil supply.

2. *Drainage:* Use 6″ to 12″ porous drain tile for playing field. Tee inlets with rubber caps around running field. Connect to 12″ vitrified tile to catch basins. Pumps in catch basin. Connect catch basin to main street sewers. Grade play area to tee inlets and blind ditches.

3. *Fine grading:* Under grandstand, stands and enclosure structure use 6″ layer of cinders. Cinder approaches and paths around perimeter of stadium. Seeded and sodded areas on playing field. Skinned surfaces at baseball diamond. Special cinders for running track. Pavement brick at main entrance approach of herring bone pattern.

C. GRANDSTAND, STANDS, ENCLOSURE STRUCTURES

1. *Piles:* Combination precast concrete and wood. Wood cutoff at 2 feet below minimum water line. Test to 20 tons safe.

2. *Pile caps:* Reinforced concrete; see local code. Use spread footings to maximum 36 square feet at 1,500 pound soil pressure.

3. *Structural steel:* Grandstand, stands, enclosure structure, roof, all lintels throughout, roofs of team and toilet buildings, ramp framing, floodlight towers, complete framing for administration building, and press and broadcast quarters on roof, framing for water tanks, etc. Live load throughout 100 pounds. Crowd sway 8½ pounds per square foot of seating area for lateral bracing. Battledeck construction for main seating, treads protected with 1¼″ thick asphalt concrete finish. Design and detail all exposed steel as trusses, columns, struts, etc., for neat architectural appearance.

4. *Miscellaneous concrete:* Concrete box section and front aisle. Concrete ramp slabs. Expansion joints on minimum 6-foot centers.

5. *Step locks:* Asphalt concrete fill in steel containers. Note steel containers in structural steelwork.

6. *Asphalt mastic:* ½-inch finish on approach to press and broadcast quarters on roof. Use over cinder concrete at all uncovered surfaces.

7. *Roof carpentry:* 4″ x 6″ rafters on steel purlins. Roofers 2″ x 10″ D. & M. S.L.Y.P. No. 1 grade.

8. *Roofing:* Five ply built-up asphalt except where asphalt mastic finish.

9. *Sheet metal:* 16 oz. copper for mansards and 20 oz. for skylights. Gutters, leader heads and leaders 16 oz. Eave strips and facia at inside perimeter 16 oz.

10. *Painting:* Shop coat specification red lead. First field coat on exposed steelwork above deck including roof trusses to be selected unfading green shade approved lead and oil paint. Second coat field paint same except shorter in oil. Exposed structural steel at underside of deck construction and below to grade to be painted two field coats specification aluminum paint, except paint lower 6 feet of columns selected shades lead and oil paint two coats.

11. Note that accommodation requirements (G) intended to cover specifications on above, where affected.

D. SEATING FOR PERMANENT STANDS

1. *Box chairs:* Flat folding type steel frame and back, wood slats, order 1,500 per approved sample. These to be used for box section of main stands.

2. *Reserve seats:* Built-up steel brackets riveted to risers included in structural steelwork. Ironwork for backs in ornamental ironwork. Seat slats continuous 2′ 2″ x 6″ and backs also wood as per detail. Flat iron armrests for individual seating. Capacity 10,542 at 19″ seat allowance. Include wood finish and painting in general painting contract.

3. *Unreserved seats:* Same as reserved except arm rests about 6-foot centers. Capacity 14,164 at 19″ seat allowance.

E. REMOVABLE SEATING

1. *Main bleachers:* Portable structural steel framing, stringers maximum 5-foot centers, seat boards 2″ x 10″ D4S, tread boards solid fill 2″ x 10″ D4S, No. 1 spruce painted to approved weatherproof specification. Tread width 25½″ and riser heights from 7½″ to 11″. Capacity for football layout 32,450 and for boxing 35,910 at 18″ seat allowance. Store under enclosure structure when not in use.

2. *Ramp bleachers:* Same as main bleachers except risers vary from 1½″ to 3½″. All treads 30″ width. Seating built-up per details. Capacity for football layout 5,986 and for boxing 18,480 at 18″ seat allowance. Store under enclosure structure when not in use.

3. *Ringside chairs:* Same as box chairs to rest on boards on ground. Capacity for boxing 2,180 to 19″ seat allowance.

F. WALLS

1. *Exterior facade:* Exterior and interior faces of selected face brick. Thickness 13″. Base of cut cast stone granite finish at entrances. Other base of concrete finish on poured concrete. Trim and band courses, coping, etc., of cut cast stone. Slate sills where shown. Statuary and ornamentation cut cast stone. Windows steel double-hung and casements as noted. Louvers as noted.

2. *Metal walls:* Interior facade of enclosure structure at perimeter of baseball outfield of 20-gauge copper bearing panels. Doors and gates 14-gauge ditto. Cut for baseball scoreboard as detailed.

G. ACCOMMODATIONS

1. *Team quarters:* One for visiting team under deck opposite third base; home team a similar building opposite first base. Each 24′ x 42′ x 10′ (ceiling height), brick walls, cinder concrete roof slab on structural steel framing. Each building subdivided for manager, umpire, trainer, and players. Manager, 10′ x 14′—1 shower, 1 lavatory, 1 watercloset, 2 lockers, 1 telephone. Umpire 9′ x 10′—1 shower, 1 lavatory, 1 watercloset, 2 lockers. Trainer 10′ x 18′—5-lavatory battery, 2 wash trays, 2 lockers, 1 rubbing table, medicine cabinet, etc. Note that players use lavatories in this room. Players 12′ x 40′ for 25 men—6 showers, 2 waterclosets, 1 urinal, 30 lockers, 2 benches. Further equipment for team quarters to include hot water from boiler room of administration building, steam heat, electric water coolers, (3) electric clothes dryers, electric lights and fans, and liquid soap dispensers and tank, toilet paper holders, mirrors, towel holders, towel baskets, etc. Mechanical ventilation for manager and umpire quarters.

2. *Dugouts:* One each for visiting and home teams. Size 5′ 6″ x 35′ for 22 players. Locate near team quarters under deck, no roof required. Equip with lights, fans, telephone, electric water cooler.

3. *Public toilets:* Four toilets at grade under deck, two for men and two for women. Men's toilets 20′ x 55′ x 10′ ceiling height divided longitudinally for unreserved and reserved spectators. Total fixtures for each of men's toilet buildings—42 urinals, 5 waterclosets, 6 lavatories, two slop sinks, mirrors and shelves, etc. Smoking rooms equipped with leather upholstered benches and public telephones in booths. Women's toilets 20′ x 55′ x 10′ ceiling heights divided longitudinally similar to men's. Total fixtures for each building—15 waterclosets, 8 lavatories, two slop sinks, mirrors and shelves, etc. Rest rooms equipped with leather upholstered benches, medicine cabinets, telephone booths, emergency closets. Also rugs on floor, curtains and drapes, side wall mirrors, etc.

Public toilets at promenade deck level (future). A pair of men's and women's respectively, at main entrance and three secondary entrances. Additional future grade public toilets at three secondary entrances in pairs.

3. *Administration quarters:* Located at main entrance above main entrance lobby; for office work, treasurer, and executives. First floor has telephone room, taxi office and toilet, emergency room and toilet, and gas meter room. Second floor: president's office, women's toilet, men's toilet, and three additional executive. Note that pneumatic despatch tube system connects treasurer's office to ticket booths at main entrance one way system booth's to treasurer. Complete interior finish and mechanical equipment per list for administration quarters.

4. *Ticket booths:* Ten required at main entrance for 18 ticket sellers. Size 5′ x 7′ x 8′ high open tops with wire mesh screens as shielded from weather. Connect these to treasurer's office with pneumatic despatch system, as above. Four required at each of three secondary entrances, for a total of 22 ticket booths and 36 ticket sellers at all four entrances. Provide 12 additional removable ticket booths for peak games.

5. *Press and broadcast quarters:* Locate on roof over cantilever behind catcher to pitcher line equal to football 50-yard line. Press quarters 20′ x 66′ x 16′ ceiling height. Four tiers with 3′ 3″ treads and 2′ 6″ risers. 230 lin. ft. continuous desk for 115 reporters. Additional reporters (100) to be seated at sidearm writing chairs for peak games. Provide 115 folding chairs same as box chairs (see "D1") and store under press seating deck.

Broadcast quarters one at each end of press quarters. Size 10′ 6″ x 9′ 6″ x 10′ 6″ ceiling height. All soundproof walls. News reel quarters one at each end of broadcast quarters 9′ x 21′ x 10′ 6″ ceiling height. All soundproof walls. Still photo quarters one at each end of news reel quarters 5′ x 42′ x 10′ 6″ ceiling height.

Note all above quarters to be glazed on field side with ¼″ plate glass. Lights, steam heat, toilets, fans, electric water coolers, telephones, telegraph outlets, smoking room, etc. Note elevator service for these quarters with shaft at main entrance and emergency stairs to main deck below. Note heavy news reel equipment for sound to be located at columns only.

6. *Concession commissary:* Locate under main deck at grade near main entrance 50′ x 100′ x 16′ ceiling height varying with deck above. Tanks for bottled drinks, humidors for tobacco, peanuts, etc. Cooking equipment for frankfurters, ice cream cabinets, etc. Lay out all equipment in co-operation with concessionaire.

7. *Concession booths:* Required for cushions and refreshments. Locations to be at grade and on promenade deck. Co-operate fully with concessionaire.

8. *Parking decks:* Of battledeck construction with non-skid asphalt finish ½″ thick. Accommodations for 1,200 cars allowing 100 square feet per car.

Ramps as detailed to slope 1.5, cinder concrete slabs rough cement finish.

9. *Parked spectators:* Reserve 25′ width at promenade for cars in addition to 10′ width for seated spectators giving a total of 35′ of promenade width with separation curbing. Ramps to parking decks to be continued to promenade deck for these cars. Park all cars oblique at plainly marked space reservations.

10. *Storage space:* This space includes quarters for grounds superintendent and his force. Also for storage of turnstiles, paints, bleachers, protection nets, flags, backstops, goal posts, etc. Locate incinerator, paper bailers, refuse containers, etc. Locate skinned area mat scrapers, bases, canvas covers for field, lawn mowers, hose, wheelbarrows, etc. Provide toilets for force.

11. *Boiler room:* Located in basement of administration quarters, size 32′ x 12′ (main floor to ceiling). Equipment: main boiler, 940 gallon hot-water tank, summer hot-water boiler, fire pump, two house pumps, pneumatic system air pump, vacuum pump, sump pump, etc. 2,500 gallon oil storage tank located 2 feet away from foundation walls outside of boiler room.

12. *Electric service room:* Located in storage space at grade near main entrance. Fireproof throughout; concrete slab roof, fire door, main distribution switch board, lighting service entrance, switch, lighting transformer cabinet, power service entrance switch, and cut-out box.

13. *Transformer vault.* Adjacent to electric service room, same construction and door. Housing for public service transformers.

H. PIPE RAILING AND ORNAMENTAL IRONWORK

1. *Railing at outer edge of promenade* on facade to be 4′ high built-up W. I. railing with pipe handrail and standards for facade lighting. See details. Railings at ends of stands to be 1¾″ diam. 4′ high double with No. 8 gauge crimped wire mesh channel frames. Railings at front of box section same as above 3′ high.

2. *Separation railings:* For box section 1¼″ diam. 3′ 4″ high, single, no mesh.

3. *Deck railings around vomitories:* 1¾″ diam. 3′ 4″ high double with mesh as above.

4. *Ramp railings:* 1¾″ diam. 3′ 4″ high, double, no mesh.

5. *Railings at ticket booths at grade:* 1¾″ diam. 3′ 4″ high double, no mesh.

Note: All railings to be weld-connected.

6. *Mesh enclosure:* Fill in all arches at ramps with wire mesh, metal frames, similar to fence construction.

4. *Scoreboards:* Baseball scoreboard to be laid out on metal sidewalls (See F 2) 25° off centerline in left field. Overall size 31′ high by 38′ length, lower edge 15′ above field grade. Strikes, balls, and outs to be indicated by 24″ high numerals No. 12 gauge plates vertical slide counterweighted and pulley operated manually. Inning information and batters 24″ high numerals on plates suspended from inside hooks. Information on games between other teams in same league to include scores by innings indicated by 24″ high numerals. All lettering and figures white on black backgrounds. Provide overhead illumination for scoreboard use at night. Scoreboards for football to be located in duplicate, one at rear tower of north secondary entrance and one at rear tower of south secondary entrance. Both to be approved patented movable football scoreboards, about 20′ x 30′ length, with 24″ numerals and 24″ movable football symbol. Lower edge of boards to be 10′ above promenade deck level. These boards to be installed only for football season and removed after final game.

5. *Signs and lettering:* All the lettering and small sign work for doors, halls, team and toilet buildings, ramps, exits, entrance block and secondary gates, bleacher and stand ramps, and all individual numbers for seating in permanent stands and press and broadcast quarters on roof.

6. *Turnstiles:* Provide 31 registering turnstiles at main entrance and secondary gates. To be equal to sample. To be equipped with air shock absorbers that check arms each quarter turn making it unnecessary to release foot lever or make any special mechanical movement so that the arms can be turned. Must be designed to be put under control of gate keeper when required, who, by simply pressing down a foot lever, can stop the turnstile arms at any point. Arms to be broad aluminum protective. Furnish 5,000 record slips.

K. PLUMBING

Include: Cold water system, drainage system, fire line system, gas system, hot water system, house sewers, house pumps, all plumbing, all plumbing fixtures throughout the entire stadium, private sewer, roof tank water supply, soil, waste and vent piping, etc.

L. HEATING AND VENTILATING

Include: All steam heat for accommodation quarters noted, all ventilating indicated, etc.

M. ELECTRICAL

Include: Bell system, lighting for accommodations, lighting exterior facade of stadium, field floodlighting, and all required cables and wiring from transformer vault to fixtures, motors, etc. Provide all conduits required. Provide all lamps and fixtures noted.

OFFICE PROCEDURE, I.

By PARKER MORSE HOOPER

The second quarter of the twentieth century is witnessing not only a complete change in architectural design but also a gradual change from architecture as a profession to architecture as a business. Today, more than ever before, it is essential that an architect's office should be run in the most efficient economical manner. Too many architects have failed to realize that the success of their work depends as much upon the efficient manner in which it is handled as upon its artistic and architectural merit. Although a client may be satisfied and pleased with his building when it is finished, if he has suffered from the annoyance of delays, unforeseen extras and mismanagement of the job, he is not likely either to recommend his architect to his friends or to give him another job to do. We all know so many good architects who are not good business men, but can they be called good architects when their only virtue lies in the fact that they are clever and artistic designers? The conservative architect of the past generation looks with alarm upon the commercialization of his profession but if he wants to keep in the race and stay on the band wagon it is absolutely essential that he should reorganize his office into an efficient, well-run business.

The office of John Russell Pope has the enviable reputation of being one of the most efficiently run architectural offices in this country. After the expenditure of great thought and care based upon thrity years of experience this firm has compiled an Office Manual with which every member of the office must be thoroughly familiar. Upon this Manual the office procedure of this firm is based. The introduction to this Office Manual shows the important factors in the preliminary work on any job. Following these introductory pages is a diagrammic layout of the manner in which the work of this firm is handled. Under the title Office Routine and Procedure follows a complete description of the several departments of the firm and the manner in which different parts of a job are delegated to them.

OFFICE MANUAL OF JOHN RUSSELL POPE, ARCHITECT ROUTINE AND PROCEDURE

The purpose of this manual is to supply and provide information and help to new employees entering this organization, and to present members desiring information in regard to procedure. It is not intended as a document of rigid law but more as an elastic guide to office procedure, and is subject to revision from time to time.

PRELIMINARY WORK

In the inauguration of a job the client should be furnished with our standard questionnaire covering space requirements, site conditions, heating, ventilating and electric systems, etc., and this questionnaire should be followed up by the office contact man to secure as much definite information as is possible in the early stages of the work. A preliminary sketch layout of the design in plan and elevation shall be made for the purpose of securing a preliminary cube and this shall be submitted to the client in a tabulated form similar to the attached sample used on the Blank residence. A member of the administrative section, the general superintendent of construction and the chief draftsman should be called into one preliminary conference with the client to determine the general set-up regarding type of construction and basic materials. Dates for completing preliminary drawings should likewise be definitely determined. Preliminary cubage should be prepared in accordance with standard A.I.A. methods and issued to the client only after being recorded in the usual office bulletin. Secure a definite set-up of cash allowances, including special items such as sculpture, models, mural decoration, hardware, lighting fixtures, outside electric, water, and sewage disposal work, special heating and ventilating, special waterproofing against ground water

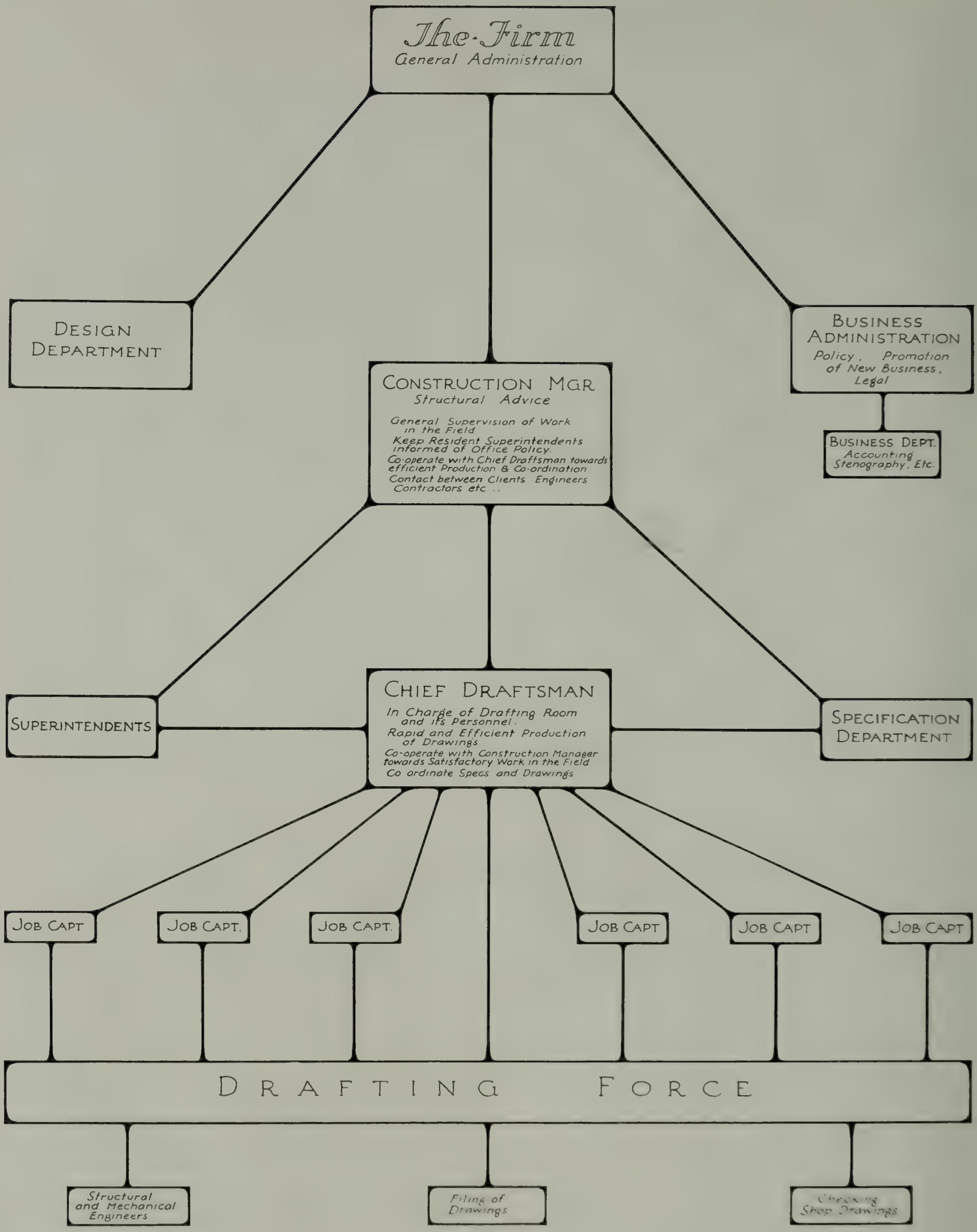

The·Firm
General Administration
Design Department
Construction Mgr
Structural Advice
General Supervision of Work in the Field
Keep Resident Superintendents informed of Office Policy.
Co-operate with Chief Draftsman towards efficient Production & Co-ordination
Contact between Clients Engineers Contractors etc ..
Business Administration
Policy, Promotion of New Business, Legal
Business Dept.
Accounting Stenography, Etc.
Superintendents
Chief Draftsman
In Charge of Drafting Room and its Personnel.
Rapid and Efficient Production of Drawings
Co-operate with Construction Manager towards Satisfactory Work in the Field
Co ordinate Specs and Drawings
Specification Department
Job Capt
Job Capt.
Job Capt.
Job Capt
Job Capt
Job Capt
Drafting Force
Structural and Mechanical Engineers
Filing of Drawings
Checking Shop Drawings

CHART OF OFFICE ROUTINE AND PROCEDURE

condition, engineer's fees, special bronze work, and in the case of residences special finish rooms. Final cubes should follow the same line of procedure.

CONFERENCES

All matters occurring in conferences should be noted and should appear at the earliest possible moment in the form of a typed report. Telephone conversations are to be considered as conferences and typed records included in the job history. At important meetings of building committees on public or semi-public buildings stenographic minutes should be kept of each meeting.

ESTIMATES

Preliminary estimates should be secured and submitted to the owner before proceeding with final working drawings. On securing this information the office is then ready, after a consultation with the chief draftsman, to set a definite date for the completion of working drawings.

FACTORS ESSENTIAL TO SATISFACTORY WORK

Time is a most important factor in all building operations. At no stage of the work should the architect procrastinate in the matter of securing decisions and expediting the progress of the drawings. The contractor is always most willing to place the blame for delay in construction work upon the office of the architect. Responsibility for progress in field construction must always remain with the contractor.

JOB CAPTAIN

In general it will be the responsibility of the job captain to handle the production of the working drawings and details with economy and with no unnecessary loss of time. Both in regard to plan arrangement and aesthetic design he should coach his men not to accept the first solution but to set up one or two alternates and quickly come to a decision in regard to the most acceptable scheme. In residence work, in particular, it is desirable to determine the elements affecting exterior treatment of the building well in advance of the development of details, in order that continual changing of the plans as the work nears completion may be dispensed with. Any overhang of upper stories over the lower should be established definitely by detail, and cornice treatment both at eaves and gable rake should be determined with sufficient accuracy to layout intersection of roof lines.

Decisions required from those higher in authority affecting design should be secured without delay. And where delays of more than ordinary duration occur, they should be made a matter of record in order that a strict accounting of the time expended on any job may be properly made at any stage of the work. Upon the letting of the contract the job captain should secure a schedule of dates upon which various detail drawings will be required for the successful prosecution of the work. He shall at all times keep a check upon the actual progress of the schedule.

MODELS

Models are frequently the cause of delay. Drawings required for models should be among the first details to be produced and should be placed in the modelers' hands at the earliest possible moment via the general contractor. The general contractor should thereafter assume responsibility for expediting the work of the modeling, and the specifications should always make it clear that such is to be the case.

SPECIFICATIONS

The specifications should always be drawn in close co-ordination with the design department. Particular attention should be paid to securing from the client, as far as possible, definite decisions regarding all matters affecting interior finish, extent of antiquing, glazing, etc. Items such as decorative painting, sculpture, wrought iron and bronze work should be put in the form of cash allowances rather than specified outright. On monumental work the line should be carefully drawn as to ornament desired to be carved by a selected stone cutter. Cash allowances must be very complete and in accord with both the client's and the designer's understanding. On large work, cost of five tons of extra steel shall be added to the cash allowance set up, and another five tons shall be called for as contingency allowance in the steel specification. Make a cash allowance for extra steel in residence work.

ADMINISTRATIVE SECTION

The Administrative Section consists of three members of the firm. All work of an administrative nature, interviewing clients, general business, administration and general design will be decided upon or executed by the administratives. All work of a financial nature, selection of lists of bidders, opening of bids, etc., will be done by this section. Inquiries arising in other architects' offices as to this office's approval of materials, contractors or subcontractors will be answered by this section. Orders for extra work and work omitted shall be signed by the Administrative Section.

OFFICE

CLERICAL SECTION

BOOKKEEPING—The Clerical Section includes the bookkeeping and stenographic departments, letter and contract filing, and telephone switchboard. The bookkeeping department keeps the records of all money transactions between the owners and this office, between the owners and contractors, makes tabulation sheets of bid comparisons, sends out all bills for service, bills to the contractors for additional blueprints and specifications and makes up the office pay roll.

STENOGRAPHIC—The stenographic department writes all letters, reports and specifications. Of all letters at least three carbon copies shall be made. Of all reports of conferences within the office at least six copies shall be made. Of all reports of conferences held outside the office and all inspections six carbon copies shall be made. These various carbon copies are made on different colored tissue for various distribution.

LETTER AND CONTRACT FILING—The filing department has charge of all letters and contracts, the recording of all incoming and outgoing blueprints, specifications, samples, etc. Only the file clerk shall have access to the files.

All blueprints and specifications sent to contractors shall be accompanied by a receipt which the contractor shall sign and return. The receipts are in duplicate, one white and one yellow. The white copy is sent out and the yellow copy remains in the receipt book. When the white copies are returned they are to be pasted over the corresponding receipt. The yellow copy of all correspondence, after being initialed by persons concerned, shall be filed. The yellow tissue copy of all letters, reports and inspections shall not be removed from the filing department but is to be kept for ready reference. When a job is approximately done, letters shall be retired to transfer cases in the stock-room. All contracts and all comparison of bid sheets shall be filed separate from the letters.

INCOMING MAIL AND TELEGRAMS—All incoming mail and telegrams, except bids and personal mail, shall be opened by this section and stamped as to date and time. Where blueprints are included with a letter, the blueprint must not be detached from the letter, but the original letter and the blueprint shall immediately be sent to the Chief Draftsman. Where blueprints are received without a letter, they shall be immediately sent to the Chief Draftsman.

OUTGOING MAIL AND TELEGRAMS—The copies of all outgoing mail shall be distributed as follows: Copies of all letters shall be sent to the field sections, and one copy shall be given to the General Superintendent of Construction. The yellow copy of all letters shall be sent to the Chief Draftsman for initialing. All telegrams shall be handled the same as letters, except that a confirmation shall be sent by mail.

REPORTS—Reports of conferences and inspection shall be distributed to all needing the information.

CONTRACTS—This section shall receive preliminary and final estimates and shall tabulate them, taking particular care of a matter of additions or deductions of alternate bids, addenda or supplements, unit prices and the inclusion of all cash allowances. Where a contractor has neglected to give such alternates or unit prices, this section shall, whenever there is time, obtain them. Prior to the signing of the contract between the Owner and the Contractor the Contract shall be checked by the Chief Draftsman, General Superintendent of Construction and Specification Writer. This section shall file all Contract Documents.

FORM LETTERS—Printed form letters shall be used with supplements to the Owners, approval of subcontractors, to the General Contractor, and extra and credit forms to both the Owner and the General Contractor.

TELEPHONE—When the office telephone operator receives a call and cannot locate the person called, she shall make out the proper form and immediately place it on the person's desk. All long distance calls shall be recorded according to form supplied for the purpose.

DRAFTING ROOM

CLERICAL SECTION

This section takes care of the filing of all drawings and shop drawings, and card record of same; giving out numbers for sketches, drawings, addenda and supplements; ordering of and giving out all drafting room supplies; ordering of all blue-prints and photostats; doing all mailing, deliveries and errands; and issuing and collecting time cards.

BLUEPRINTS AND SPECIFICATIONS—Where issuing blueprints to Contractors estimating on a building, one set of blueprints of all drawings and one set of mineographed specifications shall be sent to each firm of General Contractors on the list of bidders without cost to them. Any additional sets of blueprints shall be sent from the blueprinter's direct, either C. O. D. or, where out of New York, by parcel post C. O. D. Where a General Contractor wishes additional parts of a specification, blueprint copies of the bond paper set shall be sent the same as drawings. Where a Contractor wishes complete additional specifications, mimeographed sets shall be sent him and the bookkeeping department so notified for billing.

Where issuing blueprints of scale drawings or details to a firm that has obtained a contract, four prints of each drawing shall be made, three sent to the General Contractor and one to the Architect's Field Superintendent. Three sets of specifications shall also be sent to the Contractor and one set of specifications shall be sent to the Field Superintendent. Any additional blueprints requested by the Contractor shall be sent from the blueprinter's Direct C. O. D.

All supplements to drawings and specifications and all addenda to specifications shall be issued same as other drawings and specifications, except that a copy of all change supplements shall be sent to the Owner.

It shall be the duty of this department to see that all drawings, supplements and addenda have been initialed by the Chief Draftsman prior to sending for blueprints.

Where a drawing is revised instead of a small supplementary change the drawing shall be reprinted and issued to the General Contractor and Architect's Field Superintendent the same as a new drawing.

The blueprint orders shall be made out by this section *only*. A transmittal form shall accompany all drawings or specifications.

DRAWING FILES—The draftsmen will have access to all drafting room drawing files, but where certain drawings cannot be readily found this department shall obtain them as required. When the draftsmen have finished with drawings, they will put them back in the tops of the drawers. This Section shall assign one member to file all such drawings in their respective folders the first thing each morning.

SHOP DRAWINGS—Where shop drawings are given to this Section by the Job Captains, this Section shall see that same is either approved or disapproved and so stamped. One copy shall be stamped "Office Copy" and filed by this department and the remaining copies mailed to the General Contractor. A transmittal form shall accompany all shop drawings, noting on same the status of drawings at time of transmission; i.e., "Approved as Noted", "Disapproved", etc.

TRANSMITTALS AND MEMO ORDERS—All transmittal forms shall be made out by the Job Captains. The white copy is to accompany the material sent, the yellow copy is to be given to the Chief Draftsman, who, after checking same, will send it to the Job Captain. The Job Captain will keep same arranged as to date sequence till the completion of the job and then give it to the Clerical Section for filing with the letters. Memo Orders for all outgoing blueprints, specifications, samples, etc., will be made out by this section and sent to the Clerical Section for recording; after recording they shall be destroyed.

ORDER RECORDS—Order records shall be made out for all orders for supplies. The white copy being sent to the vendor, the yellow copy being kept by this Section.

CATALOGUE FILE—The catalogue files in the Specification Section shall be kept in order by this Section. All incoming catalogues shall be submitted to the Specification Writer before filing. One copy of each catalogue shall be properly filed unless the Specification Writer directs that certain products shall have additional copies for use of the Drafting Room.

DRAWING NUMBERS—This section shall keep a card index of all drawings, using white cards for sketches and working drawings, red cards for interior drawings and structural steel, green cards for exterior details and mechanical drawings, and yellow cards for full size details. All sketches shall be numbered from 1 to 99, Plot Plan 100, Working drawings 1/8" and 1/4" scale 101 to 300, Interior drawings, large scale 301 to 400, Exterior drawings, large scale 401 to 500, Mechanical drawings, Structural Steel 601 to 700, Full size details 1001. Supplements shall be numbered from 1. Draftsmen shall apply for the proper number.

SUPPLY ROOM—This section shall keep the supply room properly stocked with required materials for all sections. When the office is closed for the night the supply room must be locked.

Letter transfer cases shall be removed to the storage warehouse when the job is entirely done.

MAILING AND DELIVERIES—This section shall collect all mail at the end of each day and deliver it to the 45th Street Post Office. All parcel deliveries, collections and errands shall be made by this section.

DRAFTING SECTION

Each job shall be assigned to one of the Job Captains, who will be responsible for the completeness and correctness of all drawings and supplements. As a guide to the sequence of the work, attention is called to the Drafting and Specification Procedure Chart of this manual.

DRAWINGS—Drawings, except the contract set, are not to be made on a standard size sheet, but the sheets shall be of such size as will allow for proper detailing without cramping and without being wasteful when blueprinting. Contract set is to be on equal size drawings determined at the start of the job. In order that accurate record of progress be kept, the Job Captain shall plot the approximate number of sheets required and assign titles and obtain numbers as rapidly as any portion of the work is incorporated on a sheet.

In order that drawings may be kept uniform in appearance, standard indications shall be in accordance with the following charts of this pamphlet. Standard type of lettering; standard indication of materials; standard indication of door and window opening; standard indication of plumbing fixtures; standard method of dimensioning; standard method of abbreviation.

For titles use a rubber stamp and place in lower right hand corner only.

On all drawings for alteration to buildings, additions to old buildings, where new buildings are attached to old buildings, or where new panelling is placed in a room, place the large stamp "All Measurements to be Verified at the Building" just above the title stamp.

CHECKING—While drawings are being prepared, they must be checked with the checking list in this pamphlet and all necessary items included. Prior to issuing to the contractors for bid the drawings shall be checked with the specifications, conference notes, surveys, and with mechanical plans for sump pits, floor drains, pump, machine and boiler foundations, pipe trenches, etc. Check all dimensions.

Two weeks before date of submission of drawings to bidders, structural and mechanical engineers shall be notified to proceed with final check and also check engineering requirements for reinforced concrete slabs on earth against water pressure. At the same time the structural and mechanical engineers start their final check the General Superintendent of the Field Section shall check the general construction. The Schedules shall be prepared by the Job Captain and Specification Writer and exterior and interior finish referred to the Designer for his approval.

Before issuing drawings to bidders, the Job Captain shall make a final check of the Schedule of Finishes, door schedule and window schedule.

ADDENDA AND SUPPLEMENTS—After the drawings and specifications are out for bid and before the contract is let, any additional specification information sent out is to be stenciled, mimeographed and termed "addenda." *After* the contract is let, any changes or additional information sent out is to be called a "supplement." Supplements to either drawings or specifications shall be made upon the standard supplement sheets. All addenda and supplements shall be numbered and dated and drawing number or specification page and paragraph numbers mentioned where change occurs. All supplements are to be marked for "Information" or for "Changes." Supplements shall be used for minor changes. When changes are extensive the old sheet shall be stamped "Superseded." Where addenda or supplements are issued, the drawing affected shall have the addenda or supplement stamp placed on the original drawing near the location affected. After the original set of scale drawings are sent out for bid, they shall *not* be changed, revised or corrected. Drawings are contract documents.

DRAWING, ADDENDA AND SUPPLEMENT NUMBERS—Each drawing, addendum or supplement shall have a number. The draftsmen shall apply to the drafting room clerks for such numbers and shall not assume such numbers themselves.

ISSUING DRAWINGS, ADDENDA AND SUPPLEMENTS—Before any drawings, addenda or supplements are to be blueprinted, the first time, the Job Captain shall ask the Chief Draftsman to inspect same and initial as checked. The Job Captain will give all drawings to the drafting room clerks for blueprinting and give them the required information as to number and to whom sent.

Change supplements are issued to secure estimates.

Drawing revisions or instructions to the field should not be made on the basis of a supplement until estimate has been received, and extra order is signed by Owner. Use form letter for transmission of Supplements to Owner. In case of extreme emergency requiring extra work the order should be put through to the Owner immediately on a cost-plus, unit price, or such basis as is agreed upon.

DRAWING FILES—The draftsmen will have access to the drawing files. Where it is not possible to readily find a drawing, notify the drafting room clerks. When returning drawings, lay same on the drawers on top of the drawing folders and the clerks will place them in the correct location.

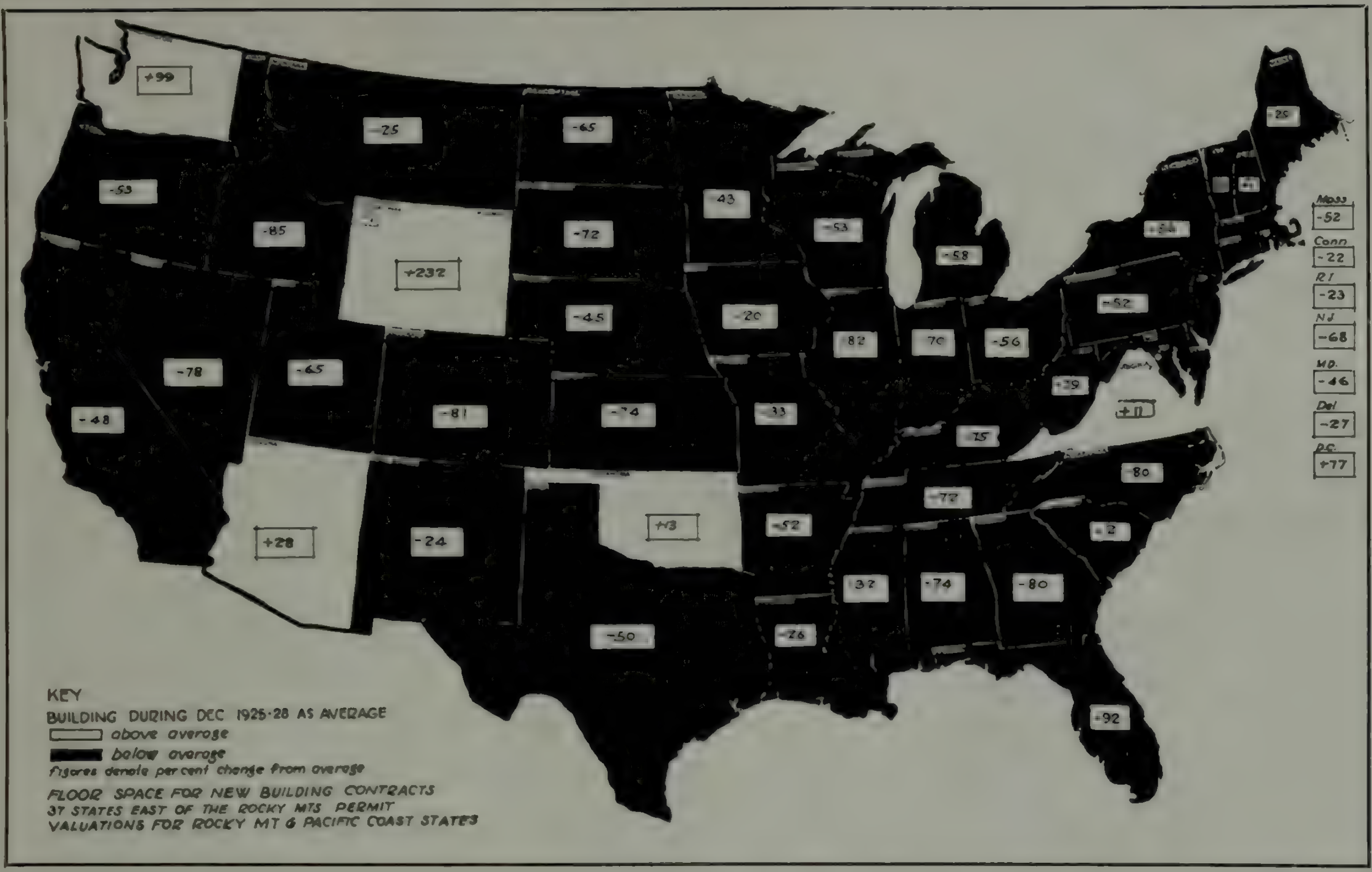
When necessary to have an old shop drawing or to file a new one, the clerks will obtain them or file them.

SHOP DRAWINGS—Shop drawings shall be checked and stamped, with "Resubmit" stamp, "Approved As Noted" stamp, or "Approved" stamp. One copy will be filed, other copies returned with letter of transmittal. Place on all shop drawings the large stamp "All Measurements to be Verified at Building."

CORRESPONDENCE AND TRANSMITTAL—The Job Captain and Field Superintendent are required to handle the larger portion of correspondence relative to their respective responsibility in a job. Do not dictate letters in the front office, phone the Office Clerical Section to ask for a stenographer. Use stenographer in place of long hand wherever possible. Where transmittals are used for the routine work of sending blueprints, or samples, they shall be made out by the Job Captain and given to the drafting room clerks.

The Job Captain shall keep a folder of all transmittals of drawings, all reports of conferences and copies of all letters pertaining to the development of the working drawings and details. Copies of all reports of conferences within and without the office will be given the Job Captain and Field Superintendent relative to their work, and they shall initial all correspondence affecting the job.

(The second half of this office manual will appear in the March issue. It will contain such features as "Hints for Draftsmen" and a "Checking List of Design Requirements.")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MD.
-46
Del
-27
D.C.
+77
KEY
BUILDING DURING DEC 1925-28 AS AVERAGE
above average
below average
figures denote per cent change from average
FLOOR SPACE FOR NEW BUILDING CONTRACTS
37 STATES EAST OF THE ROCKY MTS PERMIT
VALUATIONS FOR ROCKY MT & PACIFIC COAST STATES

The December building map showed no appreciable change from conditions reported for the preceding month. Only six states reported larger volumes than average (December 1925–1928); of these only one, Washington, showed a gain in November over average.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR RESIDENTIAL BUILDING

Residential building is the only branch of the construction industry that shows any promise of improvement during 1931. Even here whatever gain materializes will be only moderate since some further readjustment appears necessary in the light of abnormal vacancy conditions still existing in many localities, particularly in the high rental brackets in apartment houses and one- and two-family dwellings. There are doubtless many cases where families and individuals have doubled up—an occurrence genuinely characteristic of periods of general business depression. This condition has accentuated the causes and further aggravated the otherwise bad effects of protracted business debility.

That families forced by economic considerations to double up will take up abodes commensurate with their normal living standards when conditions permit is a foregone conclusion. Meanwhile, surplus space has been augmented materially, making more difficult the revival. The situation in lofts and offices is pretty much the same; occupants of manufacturing lofts have doubled up while desk space arrangements have been on the increase.

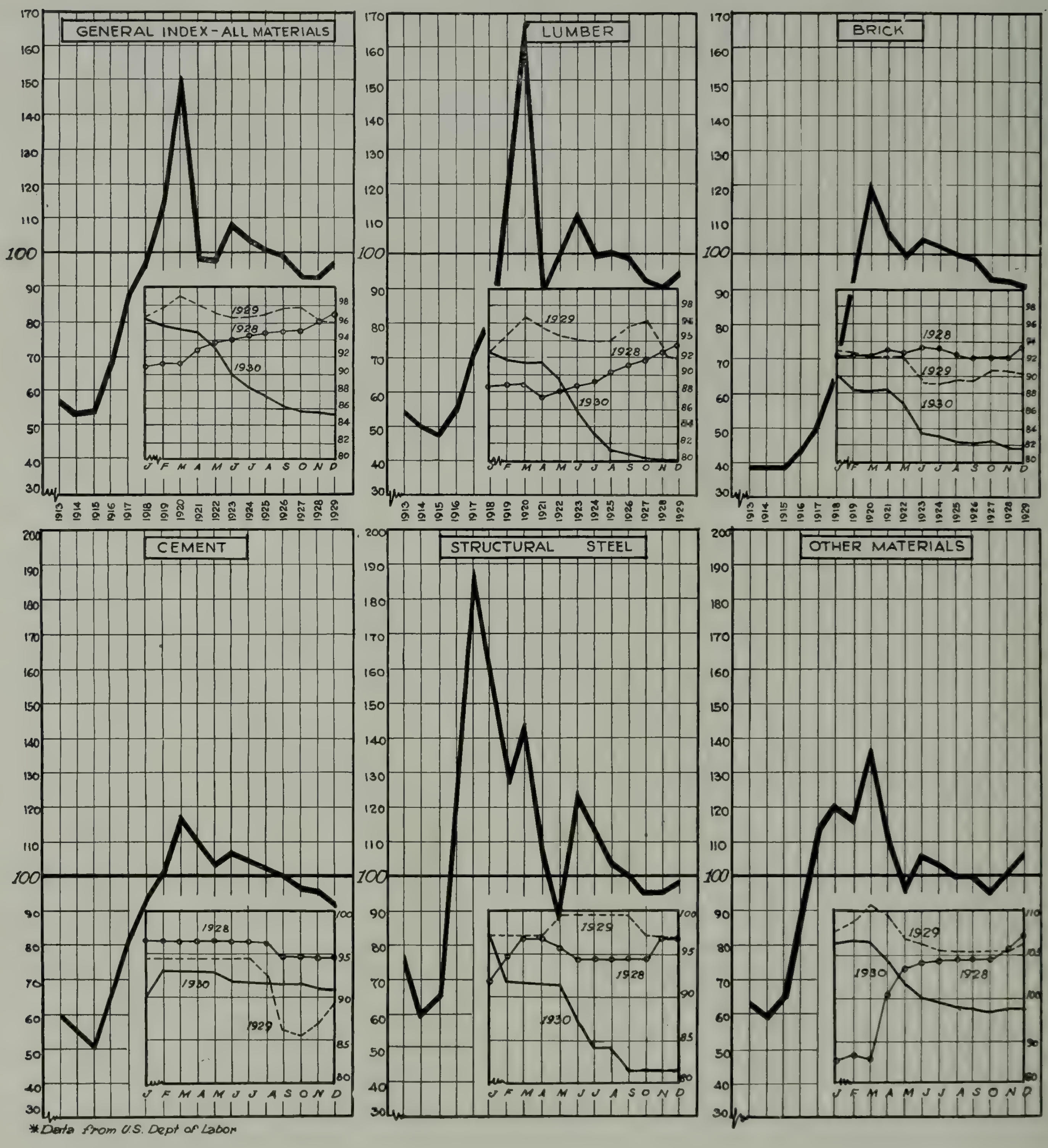
Thus surplus space, beyond what is normal, will have to be absorbed or otherwise worked off before any genuine recovery in residential building, or for that matter in general building, may be witnessed. The current year will be one of further readjustment which should be largely completed by 1932.

The readjustment began in 1929 with a sizable contraction in new residential building. It now appears that this decline which preceded the decrease in the volume of general business was somewhat delayed by the easy money conditions that prevailed. Under these conditions the large building activity of the period from 1925 through 1929 had anticipated the requirements too far in advance. Even a 30 per cent decline from 1928 in residential building was not sufficient to deflate the conditions;

(*Continued on page 92, advertising section*)

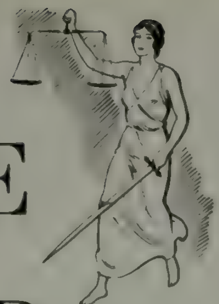
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100

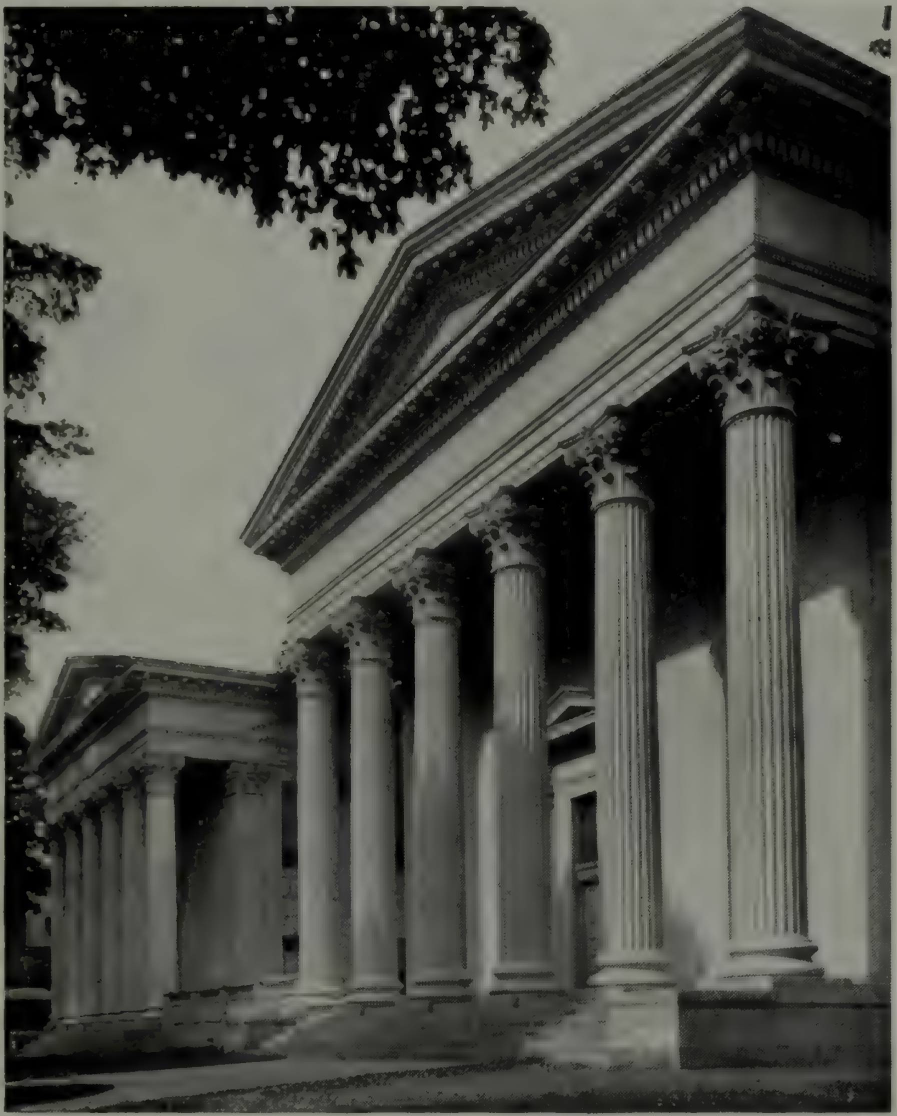


*Data from U.S. Dept of Labor

The general index of building material prices, compiled by the U. S. Department of Labor, receded further in December. The decrease from December 1929 was slightly more than 12 per cent, while the decline from the 1926 average was about 16 per cent. The purchasing power of the building material dollar in December, as compared with the 1926 average, was about $1.19. For the seven-year period from the beginning of 1913 to the beginning of 1920 the general index of building material prices was substantially lower than the general index of commodity prices at wholesale. At the present time, although there has been a very drastic decline in new building volume, building material prices are still above the average wholesale level. If building volume does not show any improvement it is not unlikely that the index of materials will ultimately work lower; at least some further price readjustments between materials and the general index seem presaged.



JUSTICE ADMINISTERED
. . . in Rooms of Lasting Beauty



The distinguished exterior of the new Erie County Court House, at Erie, Pa., is fittingly complemented by handsome interiors in white and soft agreeable tints. The architect, Mr. W. T. Monahan, specified Barreled Sunlight, of which five hundred and fifty gallons were used.

Interiors at Erie County Court House retain their fresh, clean beauty through long arduous service

PEOPLE pass in and out constantly; dust drifts in through open doors and windows. Corridors and rooms are crowded; careless hands leave finger prints, smudges. It's no easy matter to keep walls and ceilings in a public building always clean . . . light . . . handsome.

At beautiful Erie County Court House . . . as at hundreds of other fine modern buildings . . . the task is made decidedly easier by the use of Barreled Sunlight.

★ ★ ★

Flawlessly smooth, Barreled Sunlight can't hold dirt embedded. A moist cloth takes it right off. Washable as tile. Upkeep is economical.

Extremely durable, Barreled Sunlight successfully withstands repeated washings . . . retains its fresh clean beauty through long arduous service.

Whether in long-lasting white, or soft, pleasing tints, Barreled Sunlight is conspicuously good-looking, with a pronounced lustre, a rich depth. An all-oil product, it is readily tinted any desired shade with ordinary colors in oil.

You will find our catalog in Sweets; but we should like to send you, for your own files, the new booklet, "For Interiors of Lasting Beauty and Cleanliness." Write for it.

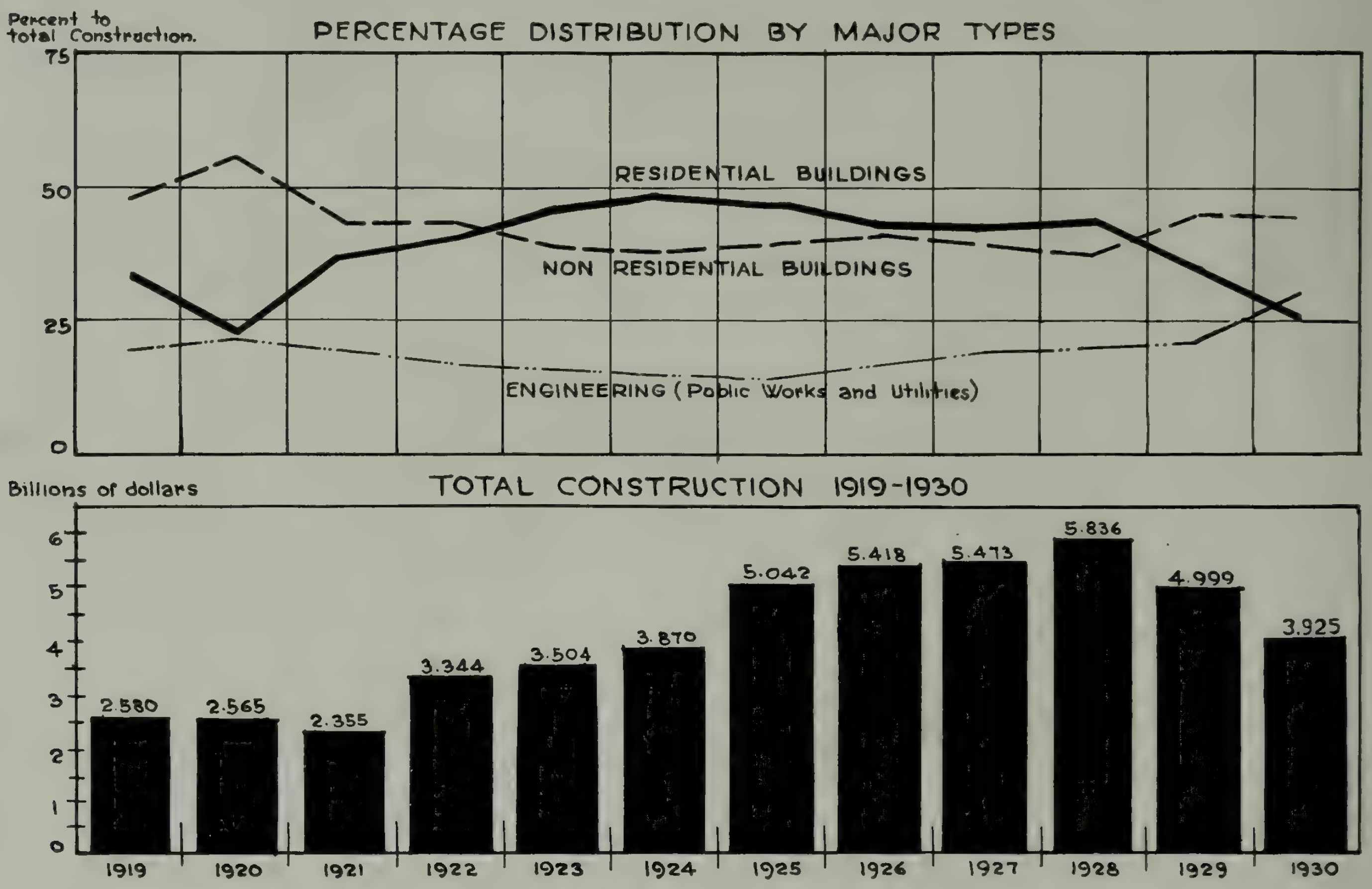
U. S. Gutta Percha Paint Co., 22-B Dudley St., Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

Barreled Sunlight is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its more pronounced whiteness, richer lustre and marked durability.

Barreled Sunlight

Reg. U. S. Pat. Off.

CONSTRUCTION CONTRACTS AWARDED IN 27 NORTHEASTERN STATES
1919—1930



Normally residential building represents approximately 40 per cent of all new construction. From this viewpoint it seems rather clearly indicated that residential building in 1931 will not attain its normal position of primary importance which will doubtless be deferred to 1932 or thereafter. For each of the years from 1922 to 1928, inclusive, residential building accounted for 40 per cent or more of the total new construction volume, having reached its maximum relative importance in 1924 when the ratio to total was 48 per cent and its maximum actual dollar total in 1928 when the ratio to total had dropped to 44 per cent.

(Continued from page 183, editorial section)

the additional decline in 1930, which amounted to 42 per cent from 1929, probably very largely accomplished this necessary end. Thus the year which has just closed showed a residential volume 60 per cent below the peak registered in 1928; in point of value one must go back to 1921 to find a total volume of new residential building lower than that which was registered for 1930.

Relative to total construction, residential building for 1930 was somewhat better than in 1920 when the volume of new construction was considerably lower than that registered in the year just closed. In 1930 residential building accounted for about 25 per cent of the value of all new construction undertaken, while in 1920 residential building represented only 22 per cent of total construction volume. That 1930 as a whole showed a higher ratio for residential building than was registered in 1920 is an encouraging sign since at midyear the 1930 ratio was only 22 per cent. This fact gives further proof to the opinion that 1931 will be a year of further readjustment between the major categories of construction with residential building showing a higher percentage of the total construction volume which, in value, will likely be not far different from that for 1930. Thus the current year will possibly show new residential building at from 30 to 35 per cent of all construction and in this respect should not be unlike the year 1921 when the aggregate value of all construction was considerably lower than the indicated total for 1931.

Normally residential building represents approximately 40 per cent of all construction. From this standpoint it seems rather clearly indicated that residential building in 1931 will not attain its normal position of primary importance which will doubtless be deferred to 1932 or thereafter.

For each of the years from 1922 to 1928, inclusive, residential building accounted for 40 per cent or more of the total new construction volume, reaching its maximum relative importance in 1924 when the ratio to total was 48 per cent and its maximum actual dollar total in 1928 when the ratio to total had dropped to 44 per cent. Thus there were seven

(Continued on page 94, advertising section)

Have you noted . . .

the 3-inch per foot sill slope . . *on this new frame?*

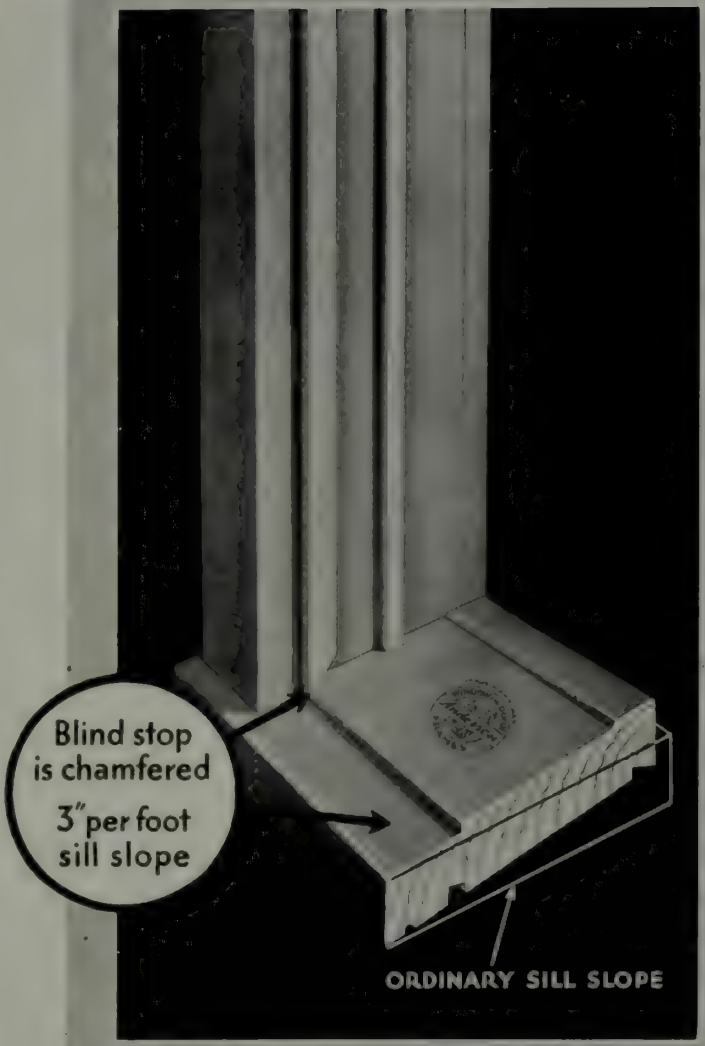
A new Andersen Feature that stops water leakage

On the recommendation of architects, Andersen now has a 3″ per foot sill slope on the new Andersen Master Frame of genuine White Pine . . . a sill slope 60% greater than usually found on window frames.

Other *new* features are the locked sill joint, the chamfered blind stop, the inside liner and the wide blind stop. These features with the 3-inch per foot sill slope give the architect a truly weathertight installation, plus perfect drainage, plus precise accuracy in construction.

Each frame is equipped with Andersen patented noiseless pulleys, guaranteed for a lifetime of trouble-free operation.

THE ANDERSEN FRAME CORPORATION
Bayport, Minnesota
Represented by 4,000 Leading Jobbers and Dealers



Actual photograph showing Andersen's steep sill slope and chamfered blind stop, which insures perfect drainage

Model home at Amarillo, Texas. Architects: Berry and Hatch; Andersen Master Frames No. 604 from Amarillo Sash & Door Company

Andersen MASTER Frames

for a leakproof installation

(Continued from page 92, advertising section)

consecutive years when residential building was doubtless above normal from the viewpoint of relationship to total construction volume. For the first half of this period there was need for such large activity to supply housing facilities which had been deferred by war conditions and the readjustments which followed. For the latter half of the period production of housing proceeded at a pace which was distinctly out of line with other economic movements. The conditions which this maladjustment brought are those which, although somewhat delayed, contributed forcibly to the causes of the general business depression.

During the period of large residential activity the totals were swelled by the operations of speculative builders intent upon profits from the sale of their products. Though investment building proceeded apace it was the production of speculative projects that operated to upset the residential field.

Today this condition is materially altered: many speculators have been forced out of the industry by economic conditions; opportunities for profit on the sale of new residential properties are small. In consequence new residential building that will be undertaken during the current year will doubtless be dictated largely by investment considerations. In this movement the apartment house type will be of increasing importance where production and operating economies are more easily effected.

Lowered construction costs which are now variously estimated at from 10 to 20 per cent below a year ago will doubtless stimulate residential construction in sections where conditions of supply and demand are near normal. Such new building will in all likelihood make for lowered rentals, which in turn will affect existing rentals in older structures. Already evidences of this tendency are accumulating and this condition must be reckoned with as a part of the readjustment which 1931 will see in the building industry.

There is still large need for better housing for the masses whose incomes are low and for whom little new housing has been provided. The growing resources of savings banks, the increasing reservoirs of life insurance companies and building and loan associations, may find profitable employment in filling this urgent need. To the extent that better housing for less money can be provided for the masses during 1931 will residential building show improvement. Vigorous pressure for sales of consumable goods will never restore prosperity since prosperity depends upon the production of wealth. Housing of the investment types is wealth. Recovery from depressions always has been spontaneous in the past but only after the conditions which brought them about had been removed. The recovery from the present depression will be signalized when the causes which brought it about have been dissipated, and of these causes not the least important was speculation in residential building.

The semi-annual survey of the real estate market recently released by the National Association of Real Estate Boards covering 349 cities shows clearly some of the factors which must be more closely attuned to insure genuine recovery in building. Builders have found it increasingly more difficult to obtain funds for new building operations except in such cases where conditions of demand have indicated opportunities for profit without undue risk.

The survey discloses diverse tendencies in money conditions as between cities of different sizes. Cities having a population of 500,000 or more disclose supplies of mortgage money in excess of demands, but this surplus will not likely be made available unless genuine demands for space exist, so closely are the financial interests watching space conditions. In cities of smaller size the availability of mortgage money in excess of demands is lower while more than half of the cities of less than 25,000 inhabitants report money demands in excess of supplies.

Thus it appears that the smaller cities offer investment opportunities for the most part not to be found in the metropolitan centers. It is in these smaller cities that overbuilding reports covering residential properties show relatively the most favorable conditions. For single family dwellings the survey shows 62 cities of less than 25,000 inhabitants where building is normal; 29 cities where it is under current demand; and only 9 where there has been overbuilding. For cities over 500,000, 85 report normal conditions; none shows current building less than demand; while 15 show overbuilding. For apartment houses similar comparisons between the larger cities and those under 25,000 inhabitants are disclosed in the report.

The survey further shows that real estate sales have in most cities brought lower prices than a year ago, reflecting not only decreased values but also the effects of forced liquidation. At the same time there has been a marked downward trend in rents on one- and two-family houses, with almost 60 per cent of the reporting cities showing this declining tendency. For apartments only 33 per cent of the cities which reported show lowered rentals than a year ago. In the meantime foreclosures on investment residential properties, principally apartments, have been large and construction costs have declined.

Foreclosure acquisitions have put purchasers in a position of advantage over builders so far as opportunities for investment on capital outlay is concerned. Rentals on properties thus acquired can bring larger return than rentals on fairly similar conveniences in new undertakings. It is not unlikely that further shading of rentals on foreclosed properties, if competition for tenants makes it necessary, may in effect become an important ratarding influence upon new residential building.

L. Seth Schnitman

the Pumps that *Cannot Rust*

Rust, the eternal enemy of iron and steel, is ever alert for the attack whenever these metals are exposed to water, and protective coatings are at best only a partial defense. ¶ Positive protection against the danger of rust has been achieved in the Penberthy Automatic Electric Sump Pump and the Penberthy Automatic Cellar Drainer, by the complete elimination of iron and steel. These pumps are built of copper and bronze throughout — they cannot rust. ¶ Dependability and economy of operation are consistent with the quality of materials used in the Penberthy Automatic Cellar Drainer and the Penberthy Automatic Electric Sump Pump.

Both types are carried in stock by leading jobbers throughout the country

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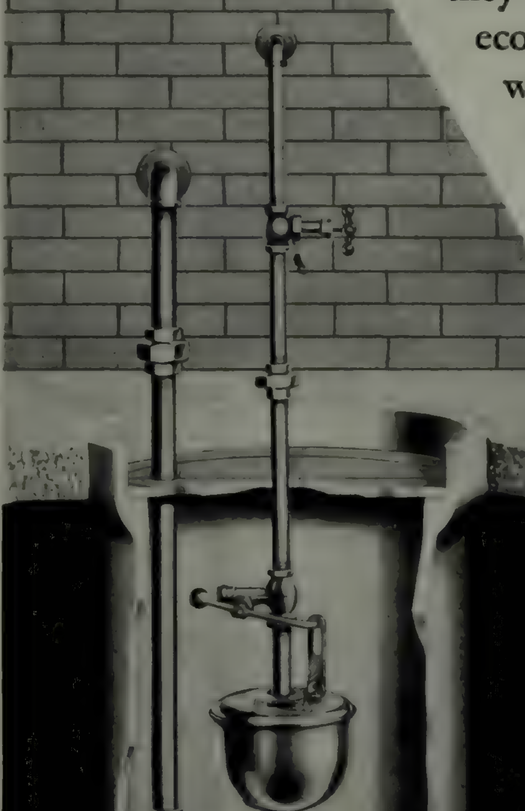
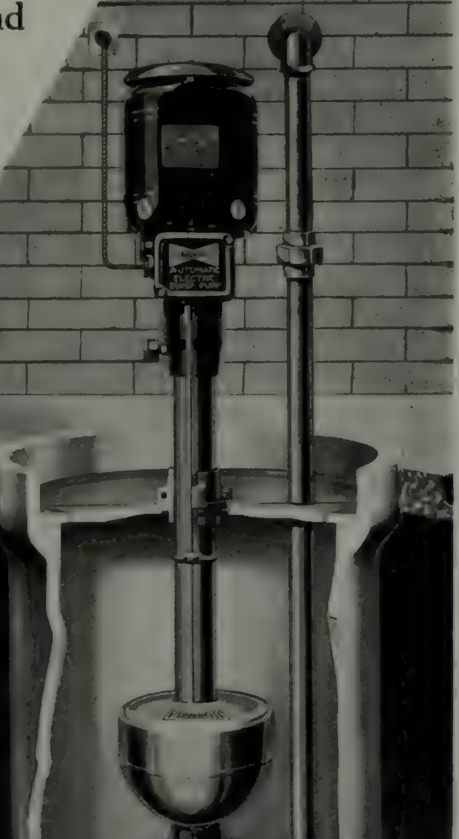


PENBERTHY PRODUCTS

Automatic Electric Sump Pump



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New Harvard Gymnasium, Cambridge, Mass.
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BROWNSKIN Resilient Building Paper

It is a dominant fact that Resilience "the Factor of Safety" found exclusively in Brownskin has no counterpart — *Or Equal*—in any other building paper.

Many Architects, therefore, familiar with the advantages of this extraordinary paper, deliberately specify Brownskin and drop the "OR EQUAL" clause.

This is especially true on Stucco Construction where Brownskin has proved to be the only building paper that will expand and contract with the stucco without breaking.

And on ordinary construction it is also a fact that all non-resilient papers split—tear and drag from the nails when subject to building strains, shrinkage and settling, whereas Brownskin meets these distortions without breaking. It's safest to specify and insist on Brownskin, the Resilient Building Paper.

Samples and complete information on request.

ANGIER CORPORATION
Framingham Massachusetts

California residence sheathed in Brownskin ready for stucco work
Owner, R. T. Creswell. Architect, H. G. McMastern

Otto Sarony Co

FREDERICK WILLIAM WINTERBURN

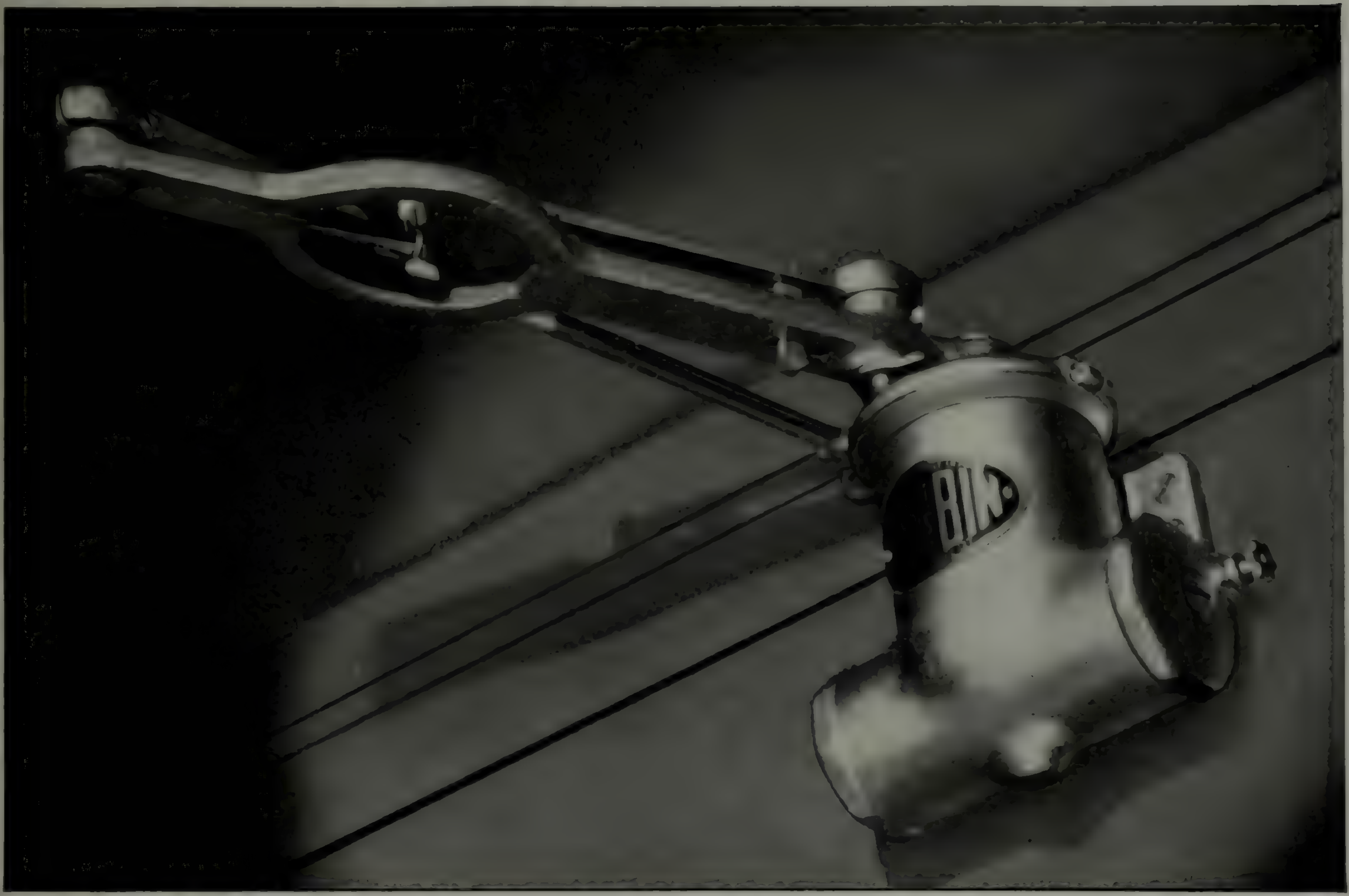
Mr. Frederick W. Winterburn was born in Liverpool, England, July 30, 1849, and came to the United States with his parents at the age of four years. His family settled first in New York City, then in Coytesville, New Jersey, and finally in Edgewater, New Jersey. Here he lived for many years, taking active part in civic and church affairs. During the past thirty years he had his residence at 104 Riverside Drive, New York, and spent his summers at "Coprock", his Pocantico Hills estate. It was there that he died on September 2, 1930, at the age of eighty-one.

Early in the seventies he went back to England where he studied architecture at the Kensington Art School, London. At the age of 22 he returned to New York to practice his profession, having an office at 31 Nassau Street, New York, until about July, 1889, when he became associated with Mr. Charles W. Clinton at 32 Nassau Street. On May 1, 1894, Mr. William H. Russell of Renwick, Aspinwall and Russell joined with Mr. Clinton under the name of Clinton and Russell. Mr. Winterburn continued his association with this firm until he retired about twenty years ago.

In 1899 he joined the Architectural League of New York and became a member emeritus after twenty-five years. He was one of the oldest members of that association when he died.

During his association with Clinton and Russell, many of New York's large and important buildings were designed and erected, among which were the Mutual Life Building, Hudson Terminals, Apthorpe Apartments, Hotel Astor, Atlantic Mutual, 71st Regiment Armory, Graham Court, United States Express Building, American Exchange Bank, 60 Wall Street, Broad Exchange Building, 160 Broadway, 170 Broadway, Chesbrough Building, and many others.

Exclusive new Corbin device for self-closing fire doors wins full Underwriters' okey



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NOTE—*Upon request we shall be glad to forward for your files a bulletin completely describing this new Arm with Fusible Link for use with regular Corbin Door Checks. Just clip this paragraph and ask your secretary to send for the bulletin at once.*

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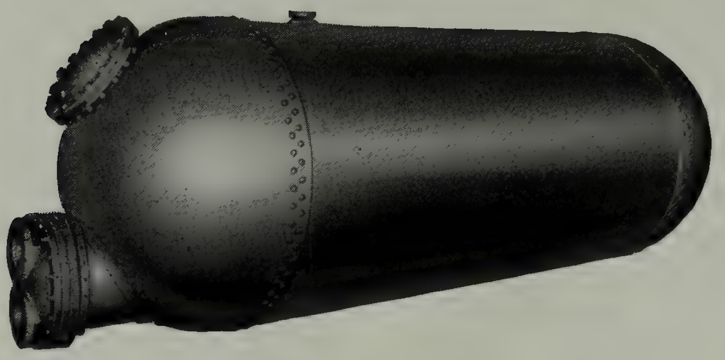
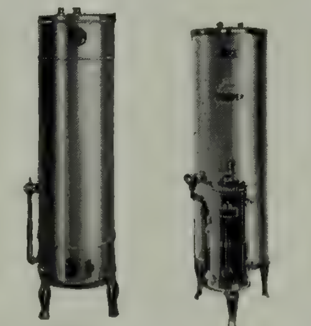
of Hot Water Boilers!



THE fact that copper is the ideal metal for hot water boilers is accepted by every one. It's almost entire freedom from corrosion under all conditions of water supply gives it a life far exceeding that of the ferrous metals. Even at the normal differential in price between copper and iron or steel, copper boilers are much cheaper in the long run due to their longer life and lower upkeep. Today, however, the differential in price between copper and steel or galvanized iron is so much less than normal that the purchaser is short-sighted indeed who neglects this exceptional opportunity to save money by specifying the superior copper boilers for new work or replacements.

The Dahlquist Manufacturing Company confines its entire hot water boiler production to copper and manufactures units in this metal from the smallest range boiler to the largest industrial tanks as illustrated above.



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AUTOMATIC GAS UNIT With Side Arm

The Dahlquist Company has introduced and patented many exclusive technical improvements which, without extra cost to the user, have greatly increased the general efficiency of the boilers. The famous Dahlquist Aquatherm and the new Turbo-Aquatherm can be had only in Dahlquist copper boilers and full information will be gladly sent to those interested.

Dahlquist Mfg. Co.

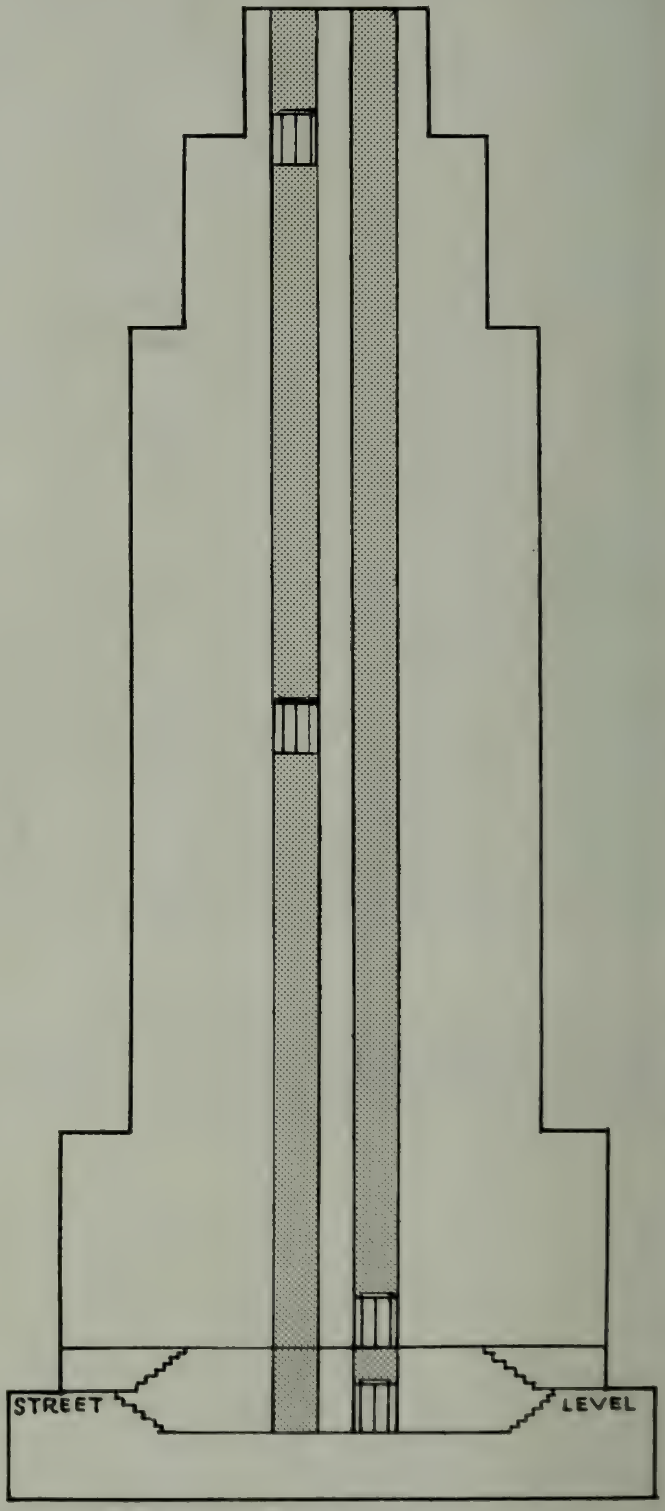
A, 2nd & West 3rd Streets So. Boston, Mass.

NOTES IN BRIEF

TWO ELEVATORS IN ONE SHAFT

An elevator of a new type with two cars operated separately in the same shaftway has been built by the Westinghouse Electric and Manufacturing Company and placed in regular service in that company's main office building at East Pittsburgh, Pa.

A study of the elevator layouts of certain typical projected buildings shows that the use of dual elevators in these cases would save floor space that could be rented for from $35,000 to $85,000 a year.



DUAL ELEVATOR OPERATION

In the right shaft the two cars are ready to ascend. In the left shaft the cars have reached their limit of travel and are ready to descend.

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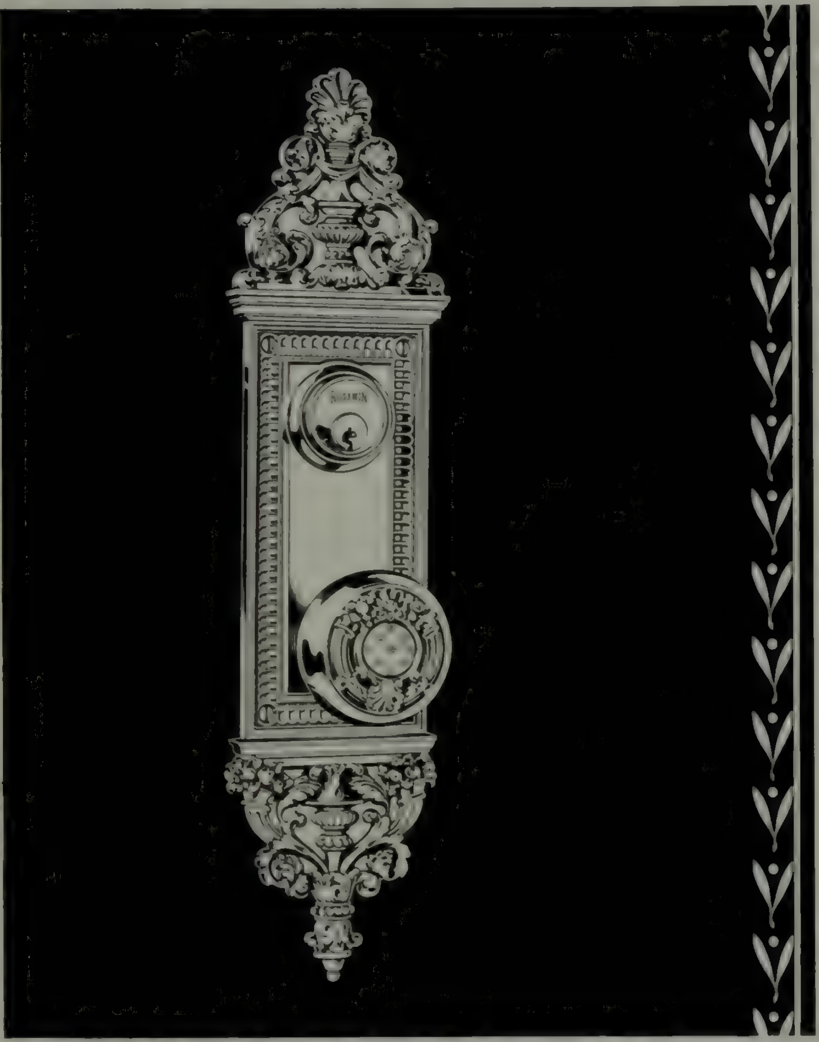
EXCLUSIVE DESIGNS BY RUSSWIN



✣ ✣ ✣ italian renaissance

BRAMANTE . . . *an exclusive RUSSWIN interpretation of the Italian Renaissance . . . features the sculptured detail of acanthus leaf and shell, contrasted with the chaste severity of finely proportioned panel . . . an ideal selection for the home or business structure styled in any of the classic periods. Base metals of brass or bronze assure, under the most rigorous usage, a life-time of unfailing, trouble-free service. Your architect or contractor knows RUSSWIN quality. Write to us for descriptive booklet showing exclusive RUSSWIN hardware for leading periods of design.*

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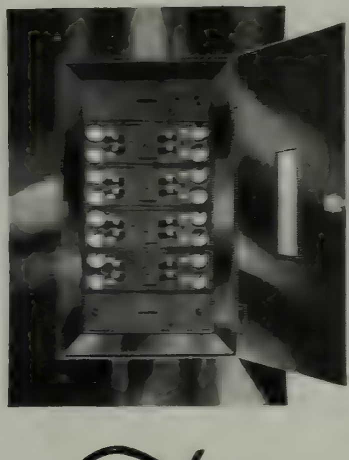

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Ⓕ Panelboards are the "Sign of a Better Job"

At 6 per cent interest these sums represent capital investments ranging from a half million to over a million dollars; and it can be said that the entire elevator installation for many buildings over 20 stories high can be financed from the additional income made possible by substituting dual elevators for separate banks of local and express cars.

The details of the operation of a dual elevator will naturally vary with the height and character of the building, the number and speed of the elevators, and many other conditions, but the following will illustrate some of the features of an installation for a 20-story building.

The upper car of the two is the express car. It starts from the street level and, running without stops to floor 11, serves the floors from that point to the top. It is entirely unrestricted as to its operation except that it is automatically prevented from running downward while the lower car is running upward. It can, however, be "inched" up or down by hand in case of an emergency. As soon as the express car is out of its way, the lower or local car which has been waiting at a basement level, rises to the street level and then serves the lower ten floors. It, too, is unrestricted except in one respect—it cannot approach the upper car within a predetermined distance. Should the attempt be made to run the lower car up against the upper one, it will be automatically slowed down and stopped at the proper point and held there until either its operator runs it downward or the upper car moves farther upward.

Car operation is so timed that both cars will normally reach their upper limits of travel at about the same time, but if the express car arrives at its destination first, it is held there until the local car completes its run and starts downward. On the descent of the two cars, the same safety precautions apply—the lower car cannot run upwards toward the upper car, and the upper car will be stopped if it comes too close to the lower.

HARVARD SCHOLARSHIPS FOR SPECIAL STUDENTS

To men admitted as special students to the School of Architecture, Harvard University offers, for the academic year 1931–32, three scholarships with an income equal to the tuition fee. The scholarships will be awarded to those candidates who, havin fulfilled all other conditions, stand highest in competition in architectural design to be conducte by the University.

Candidates must apply to Dean G. H. Edgell, School of Architecture, Robinson Hall, Harvar University, Cambridge, Mass., on or before Saturday February 21, giving the name of their employe and must fill out and file with the Dean a blank form of application not later than Saturday, March 7.

RADIATHERM

The American Radiator Company is marketing new accessory called the *Radiatherm*, a simp thermostatic device for automatically and ind

(Continued on page [illegible])

AN IDEA for ARCHITECTS

Here's a way to convert those usually unwelcome residence remodeling jobs into something of a pleasure and profit. Nothing will emphasize more clearly the change from the old to the new than the use of a few stately columns or a beautifully designed entrance. Hartmann-Sanders make it easy for you to achieve something really fine in remodeling work by furnishing columns which lend correctness and artistry to every detail, and colonial entrances that are authentic and beautifully executed.

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HARTMANN-SANDERS

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(Architects' Building)

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GARDEN STRUCTURES

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HERE are fountains as white as snow. A conspicuous mark of sanitation gracefully harmonizing with the modern light-filled corridors of today. Distinguished models are available for every particular need. Exquisitely styled and proportioned they lend a practical charm to the finest interiors. Everywhere they are shown their outstanding beauty has been enthusiastically acclaimed.

Matchless in efficiency as well as in beauty they have been a phenomenal success. Century Fountains are truly automatic. The unique Century Invention maintains at all times, regardless of fluctuating water pressure, a normal, wholesome drinking stream. Sudden splashing gushes of water have been definitely eliminated. The unsanitary, inconvenient trickle is unknown. Each turn of the handle produces a clear, full stream. A clean wholesome drink!

All mechanical devices to promote health have been incorporated. The all-brass construction assures years of carefree service. We ask you to investigate these modern fountains fully. Write today.

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Century SANITARY DRINKING Fountains

vidually controlling the steam supply to each radiator on two-pipe systems. This new device effects independent and automatic temperature control for each room. As long as an adequate heating system is in operation, individual room warmth is uniformly maintained at whatever temperature desired. Thus, if the occupant of one room wishes to maintain a temperature of 80°, and the occupant of another room prefers 70°, both get that temperature automatically with the Radiatherm.

It is claimed that economies in fuel to the extent of 20% to 40% are possible, as compared with systems employing hand-operated valves, because the temperature of a predetermined constant is maintained regardless of changes in pressure of outside temperature.

BONDED BUILT-UP ROOFS

A specification booklet giving full particulars and detailed information on asbestos felt and asphalt felt, coal tar pitch and tarred felt, etc., on roofs of various finishes—smooth, gravel, slag—for use over board sheathing, over poured concrete, over steel decks, over precast gypsum blocks, over book tile and under promenade tile. Chart of roofs giving specifications and weights. Detailed specifications (Underwriters' Laboratories Class A and B Rating), including general requirements applying to the contractor, specifications for laying roofing, materials and workmanship, general notes, etc. Detail drawings included. Typical installations. The Ruberoid Co., 95 Madison Avenue, New York City. 8½" x 11". 16 pp. Ill.

GYMNASIUM, UNIVERSITY OF CHICAGO

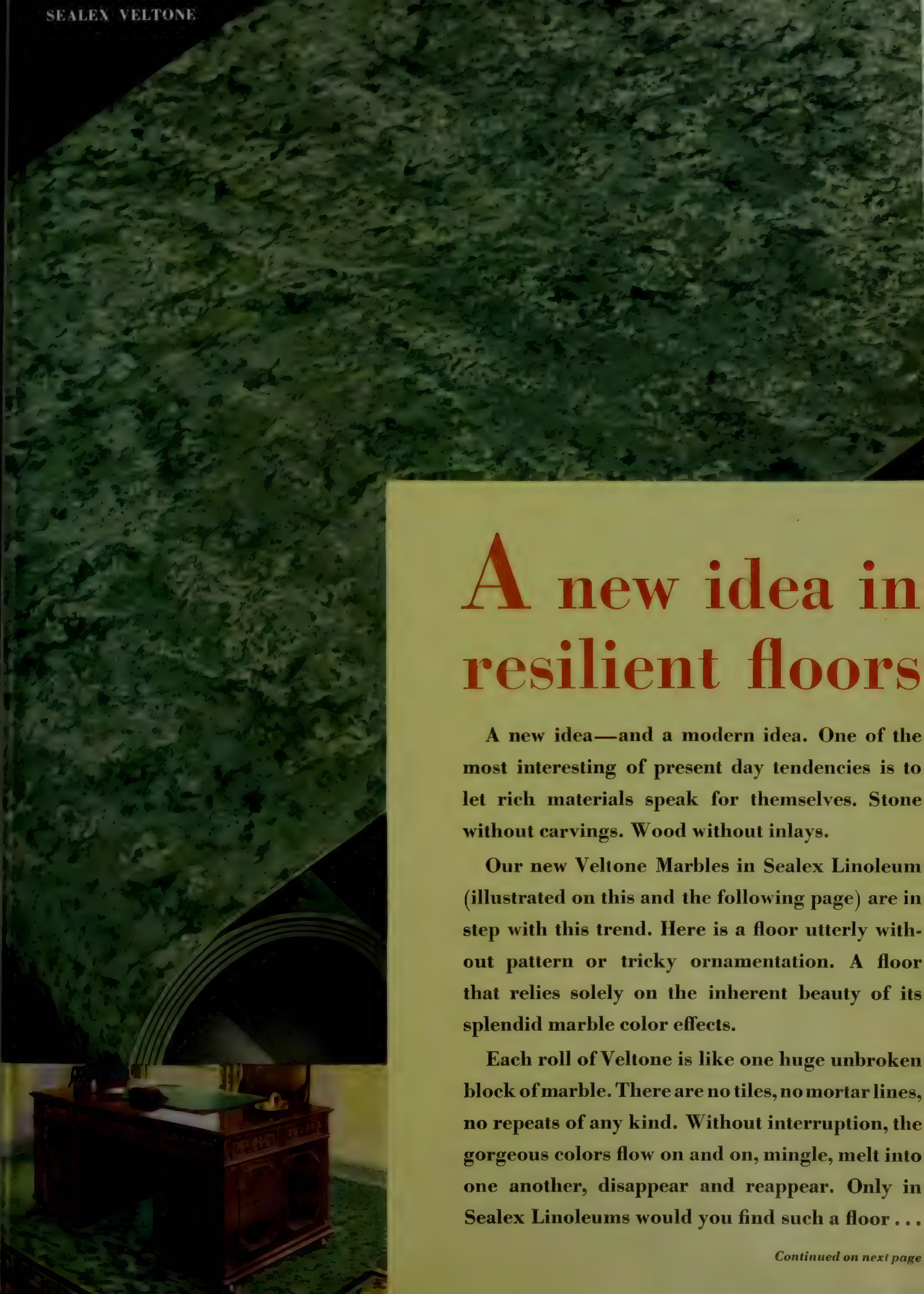
Armstrong, Furst and Tilton are the architects of the Sunny Gymnasium at the University of Chicago, a view of which was published on page 82 of the January Technical News and Research article on Gymnasium Planning. The photograph was reproduced by courtesy of the Federal - American Cement Tile Co.

DESIGNER OF CANBERRA

Frederick A. Muhlenberg, architect, who compiled the list of architectural candidates for Rensselaer's Hall of Fame which appeared in the January *Notes in Brief*, writes that he wrongly attributed the design of Canberra, the capital of Australia, to Frank Lloyd Wright. Credit should have been given to Walter Burley Griffin as the designer.

A CORRECTION

The advertisement of the Peerless Unit Ventilation Co., Inc., which appeared on page 67 in the January issue of THE RECORD and which featured the Floral Park-Bellerose School at Floral Park, Long Island, listed incorrectly the names of the architect and contractor. Credit should have been given to Edward Hahn, Hempstead, L. I., as architect, and to James McCullagh Co., Hicksville, L. I., as contractor.



A new idea in resilient floors

A new idea—and a modern idea. One of the most interesting of present day tendencies is to let rich materials speak for themselves. Stone without carvings. Wood without inlays.

Our new Veltone Marbles in Sealex Linoleum (illustrated on this and the following page) are in step with this trend. Here is a floor utterly without pattern or tricky ornamentation. A floor that relies solely on the inherent beauty of its splendid marble color effects.

Each roll of Veltone is like one huge unbroken block of marble. There are no tiles, no mortar lines, no repeats of any kind. Without interruption, the gorgeous colors flow on and on, mingle, melt into one another, disappear and reappear. Only in Sealex Linoleums would you find such a floor . . .

Continued on next page

Continued from preceding page

because only the makers of Sealex Linoleums have mastered the art of producing marblings which in beauty and realism stand alone.

We are confident that architects will see great possibilities in Veltone. A luxuriously beautiful, yet thoroughly practical, material for the business or institutional interior. A fine floor for the smart shop or restaurant. A richly decorative element to help individualize the entrance hall, dining room or living room in the home.

Among the many other innovations Congoleum-Nairn is offering this year are Sealex Linsignia. The "Ancient Galley" illustrated below is an interesting example of how readily even fairly intricate designs may be executed in Sealex Linoleum. These insets, either designed by architects or specially designed by us under the supervision of architects, are cut at our factory and shipped to the contractor, ready to install in any Sealex floor.

If you wish to see samples or desire further information on Veltone, Linsignia and other beautiful modern effects in Sealex flooring materials, please address our Architectural Service Department.

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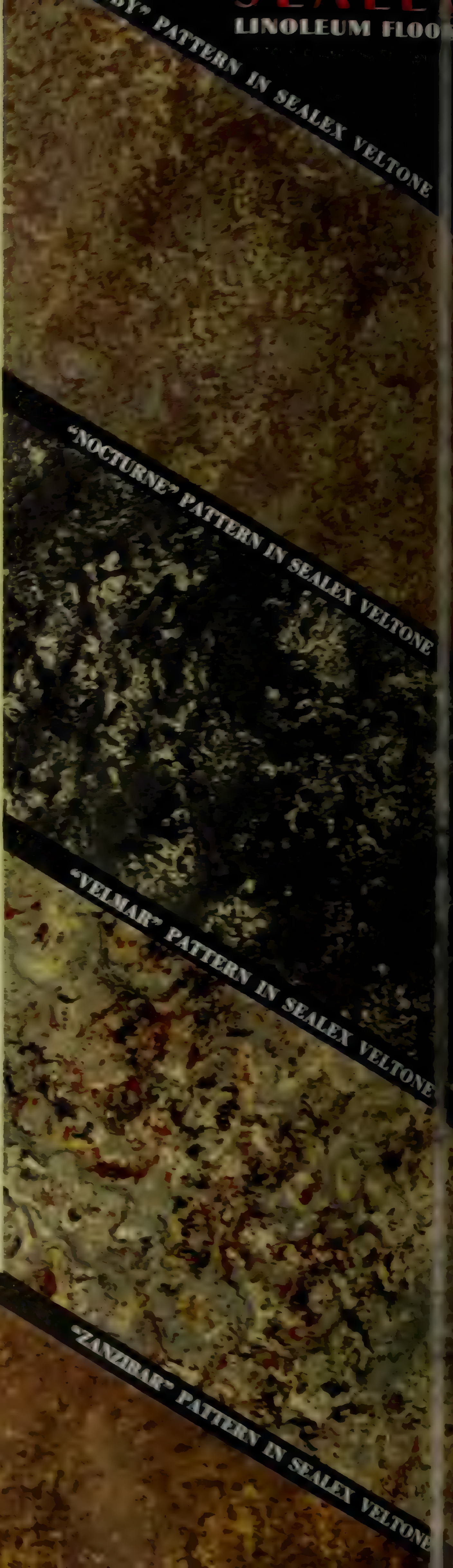
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HEADLEY EMULSIFIED ASPHALTS

Applied cold—Not destroyed by freezing

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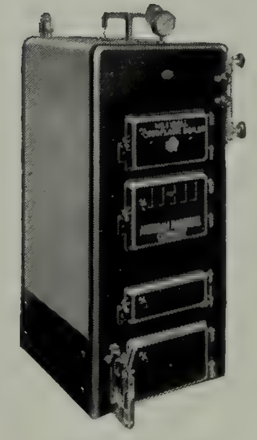

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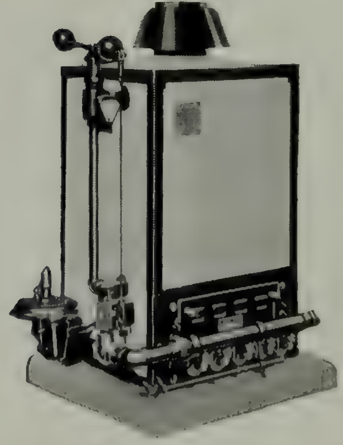

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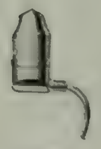

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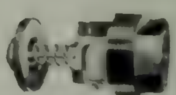

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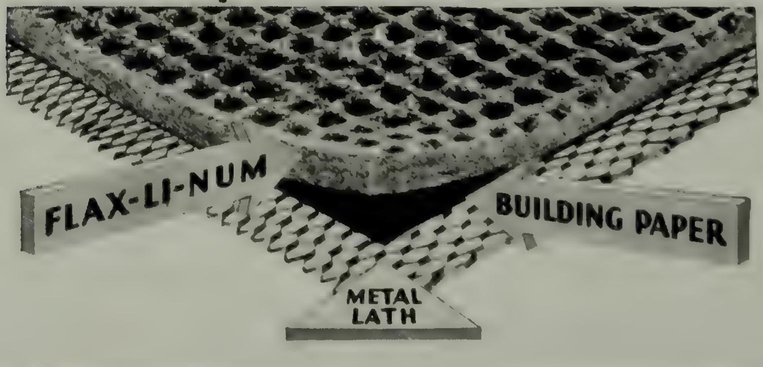

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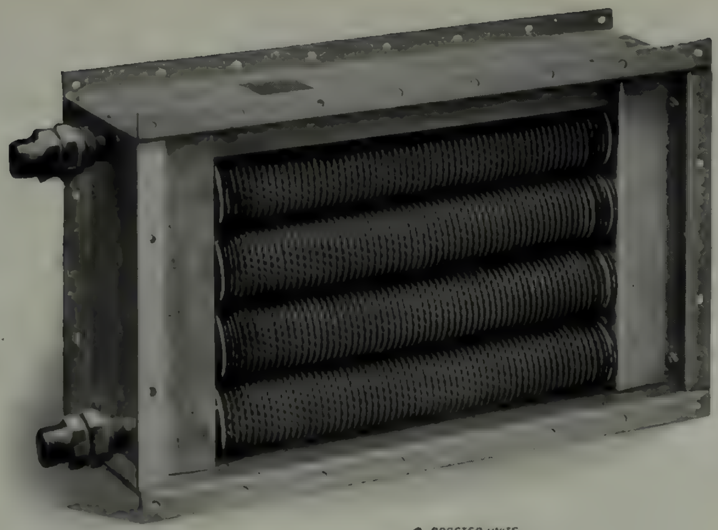

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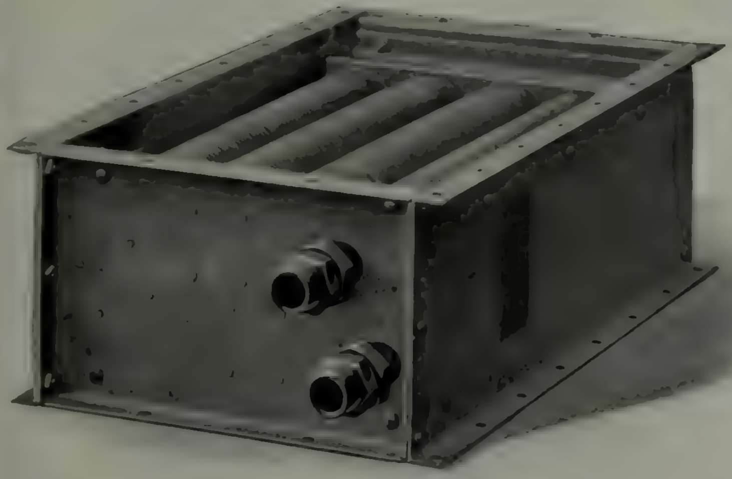

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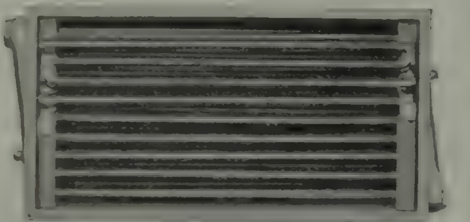

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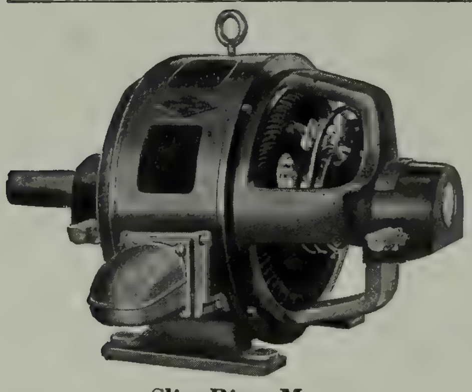

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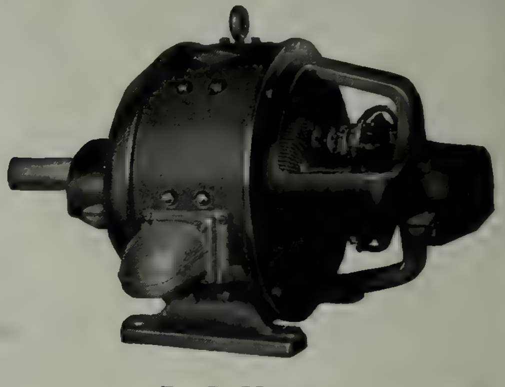

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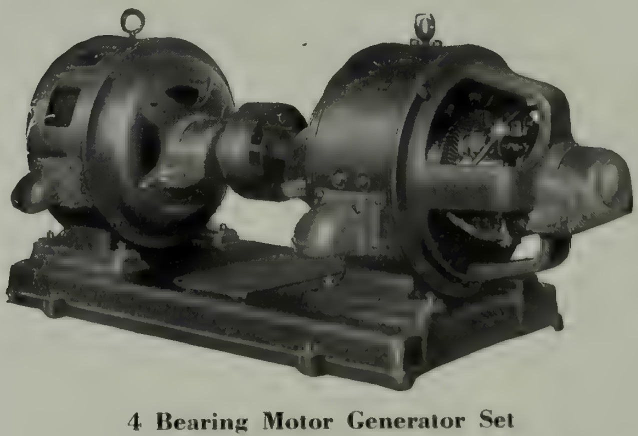

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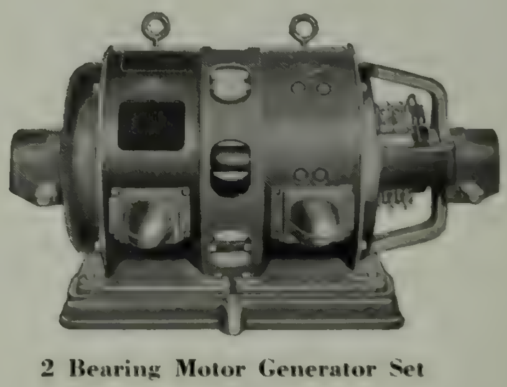

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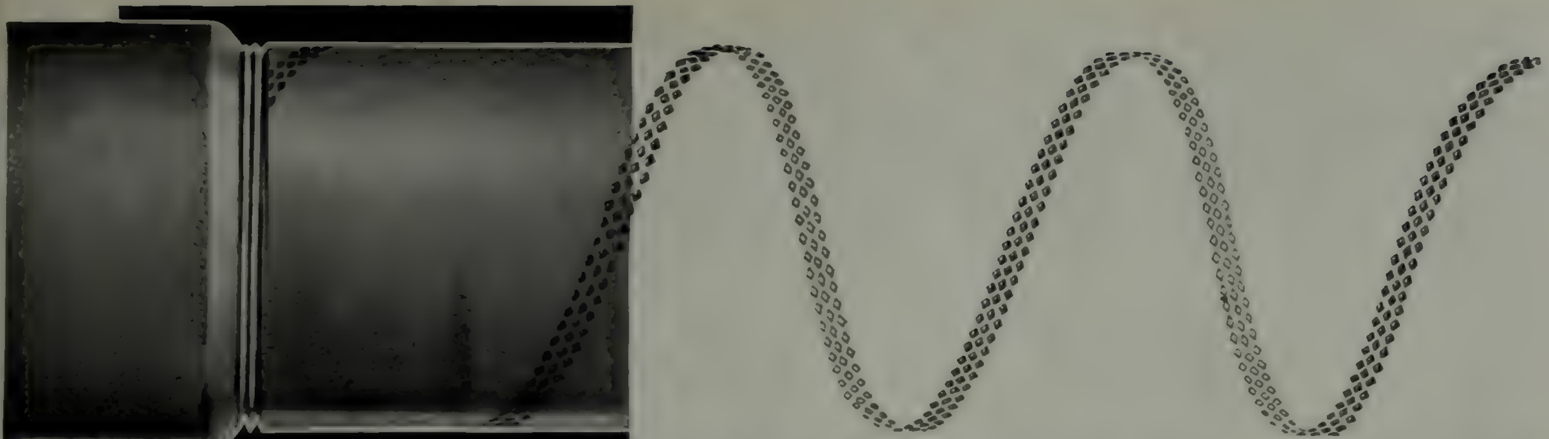

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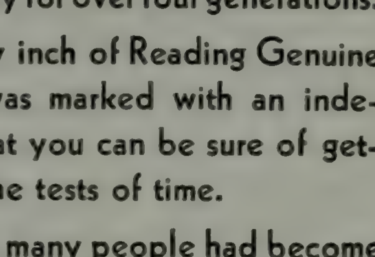

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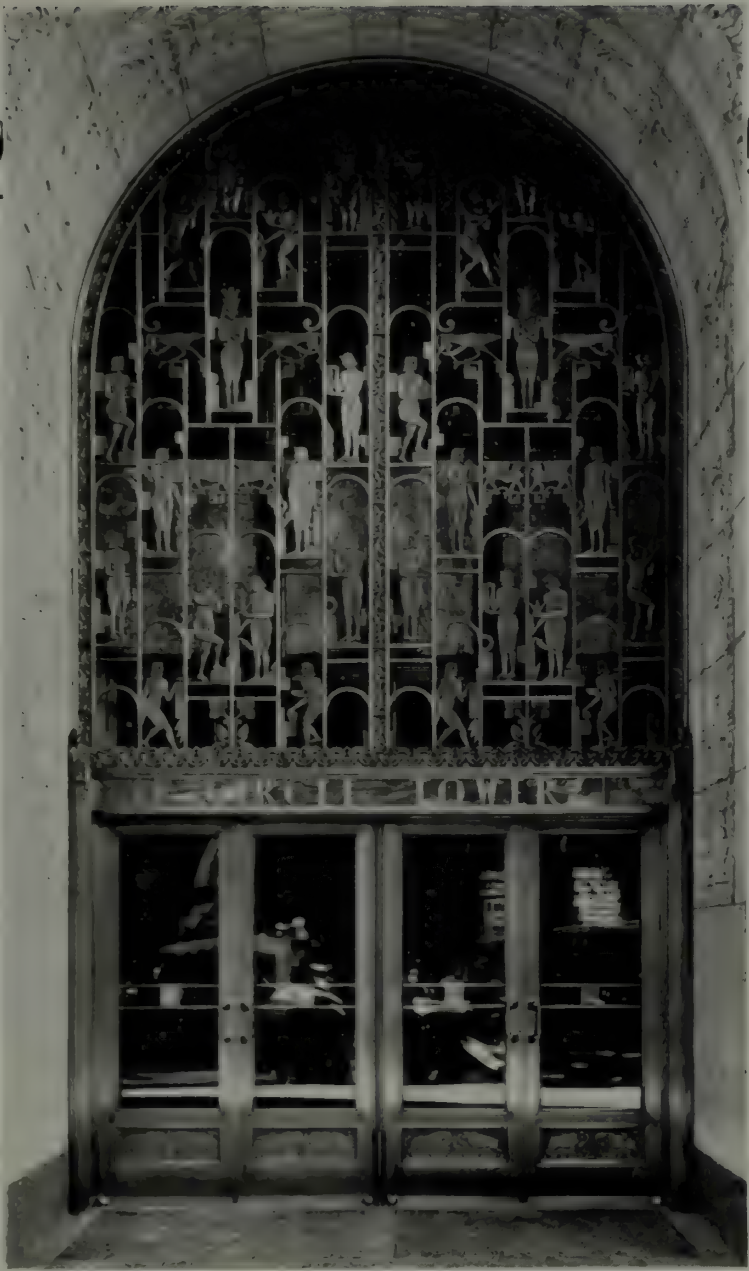

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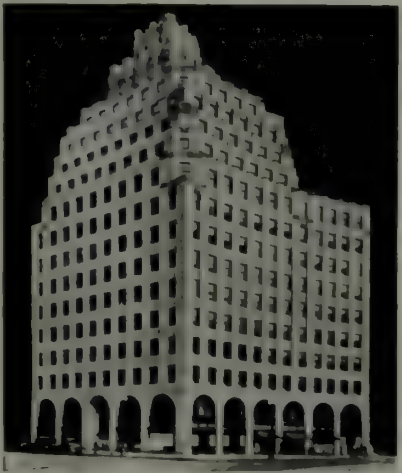

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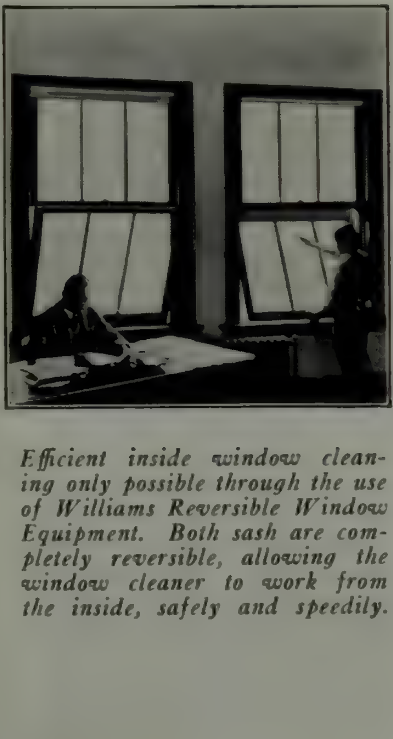

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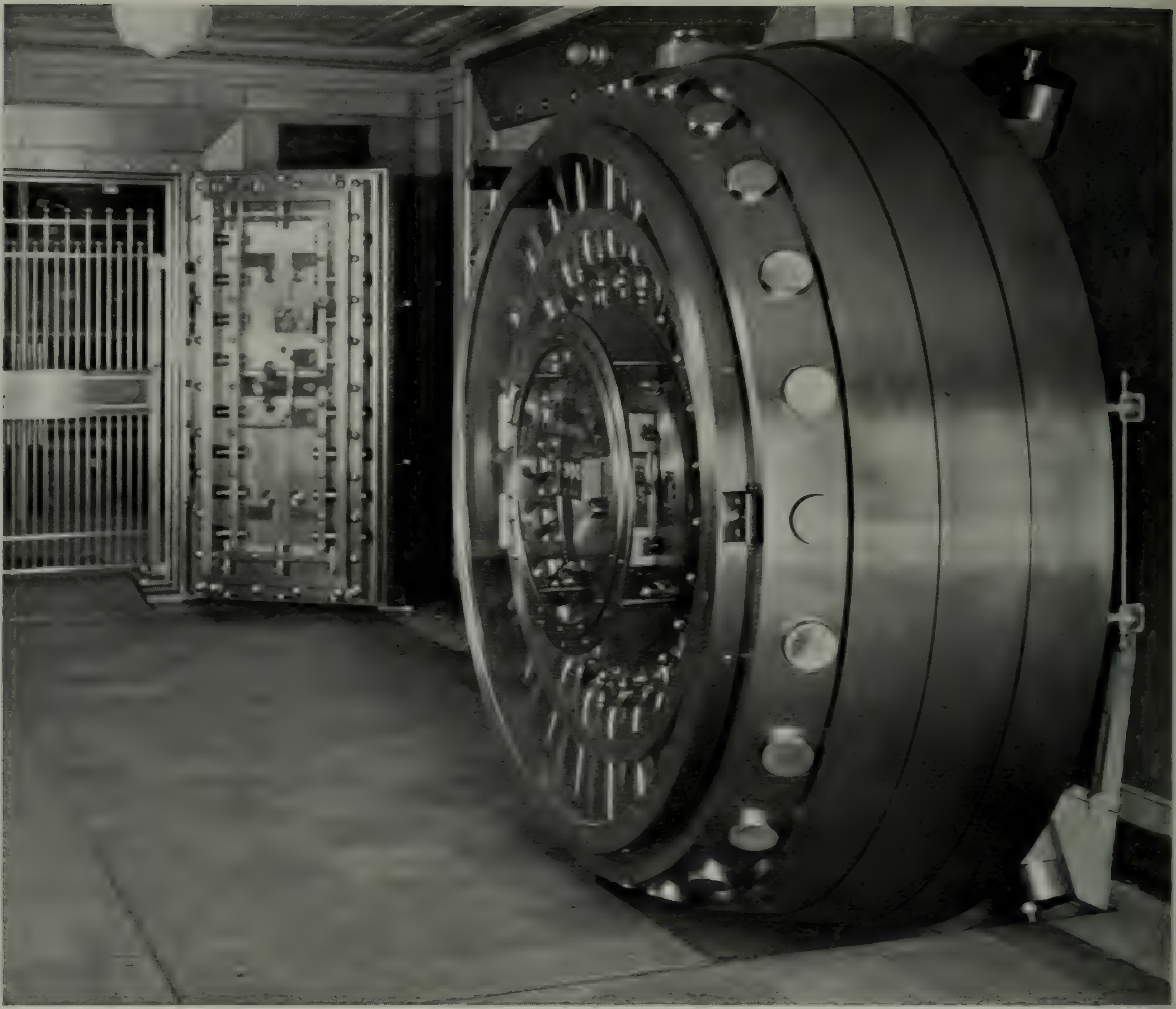

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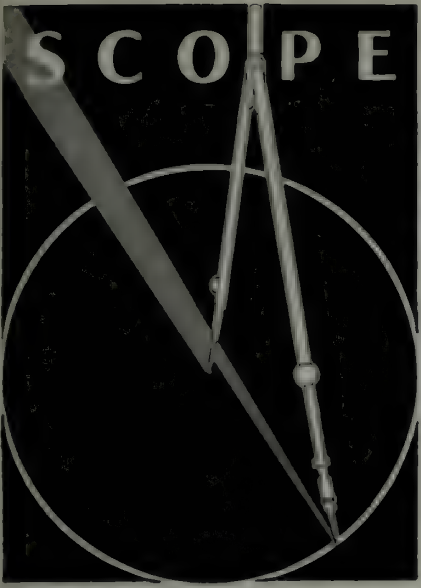

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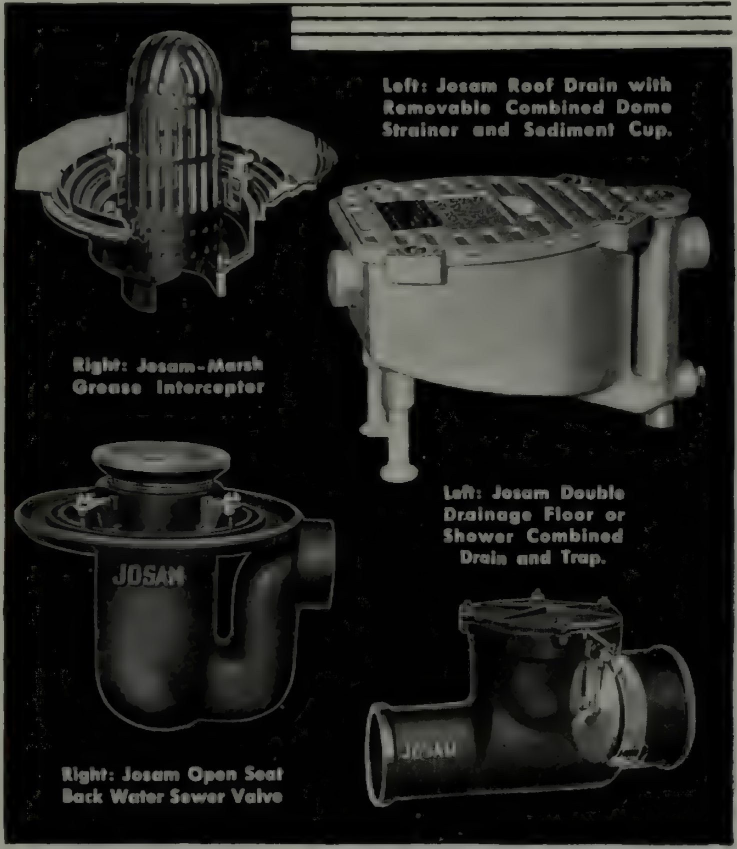

Left: Josam Roof Drain with Removable Combined Dome Strainer and Sediment Cup.

Right: Josam-Marsh Grease Interceptor

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by EMIL R. JOHNSON
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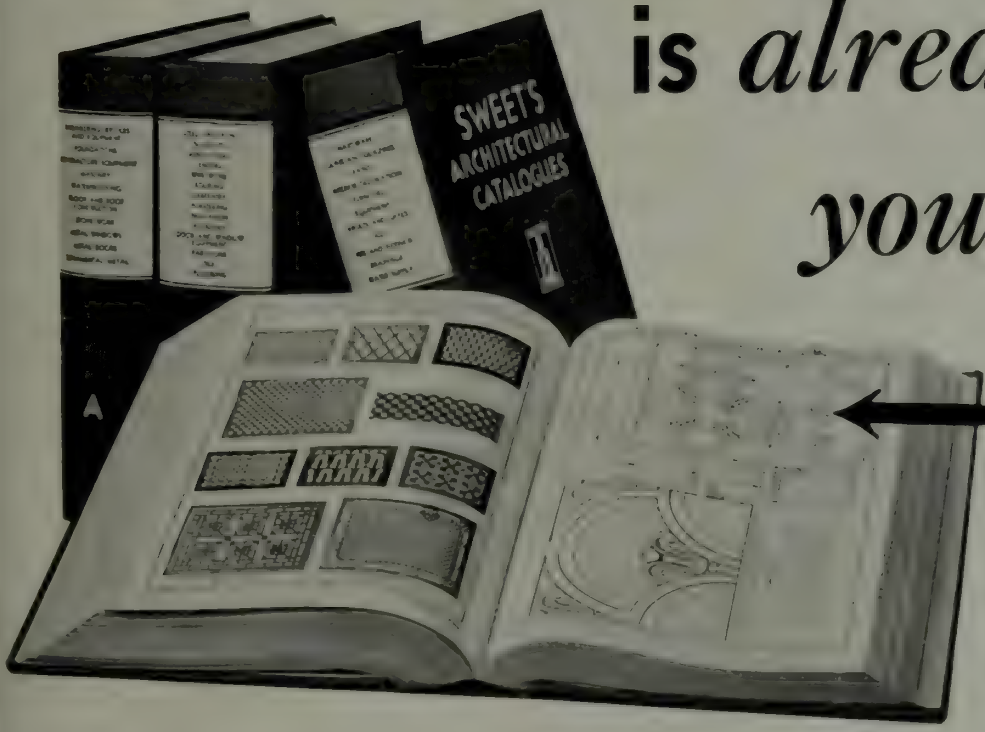

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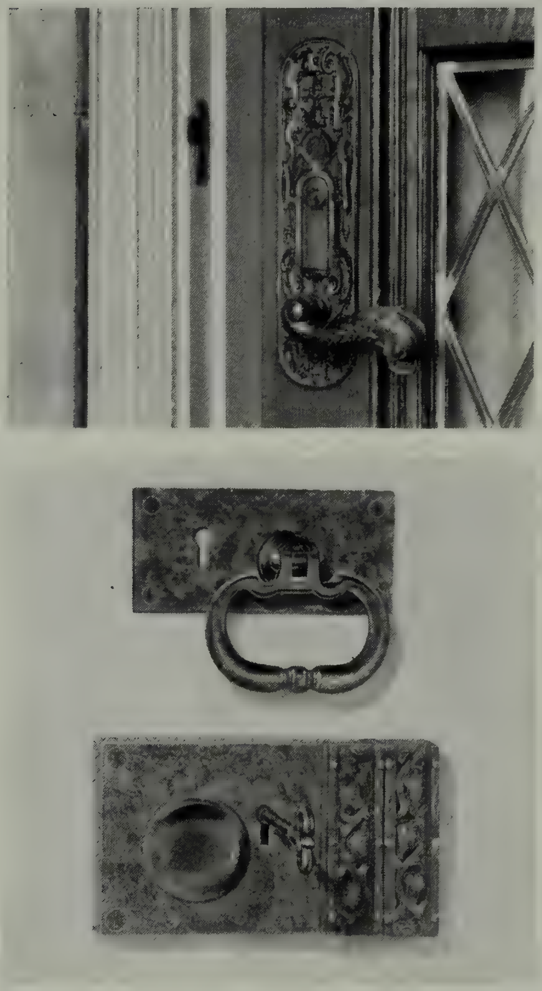

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Sketch of an interesting interpretation of English architecture—Seeburger & Rabenold, architects, Philadelphia, Pa.

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by

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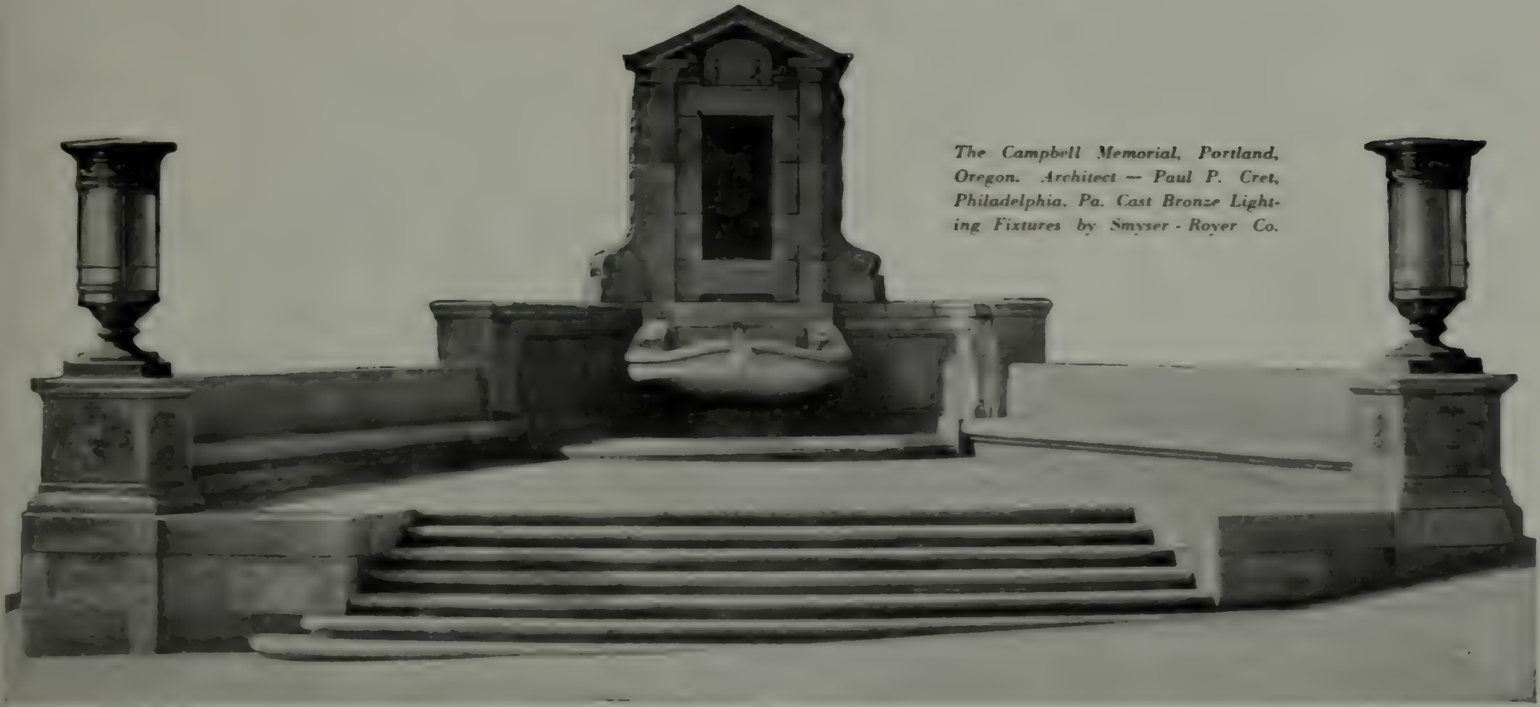

The Campbell Memorial, Portland, Oregon. Architect — Paul P. Cret, Philadelphia, Pa. Cast Bronze Lighting Fixtures by Smyser - Royer Co.

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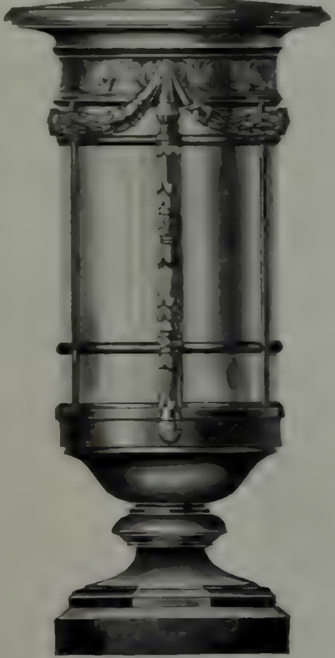
A·L·E·A



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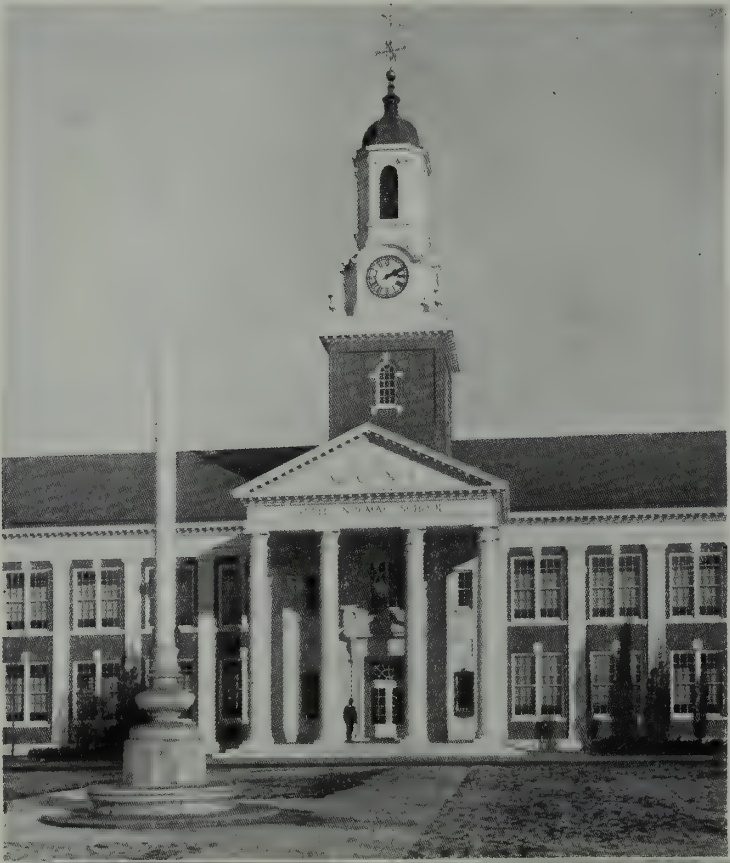


Born in Wilmington, educated in Philadelphia, Mr. Betelle started his architectural career with Cope & Stewartson, in Philadelphia. In 1900 he entered the office of Cass Gilbert, studying the while at the atelier of Donn Barber. Upon returning from European studies in 1905, he entered the office of John Russell Pope. Five years later the partnership with Ernest F. Guilbert was formed. Since the death of Mr. Guilbert in 1916, Mr. Betelle has directed the business in collaboration with Charles H. Bauer and Grant A. C. Behee.

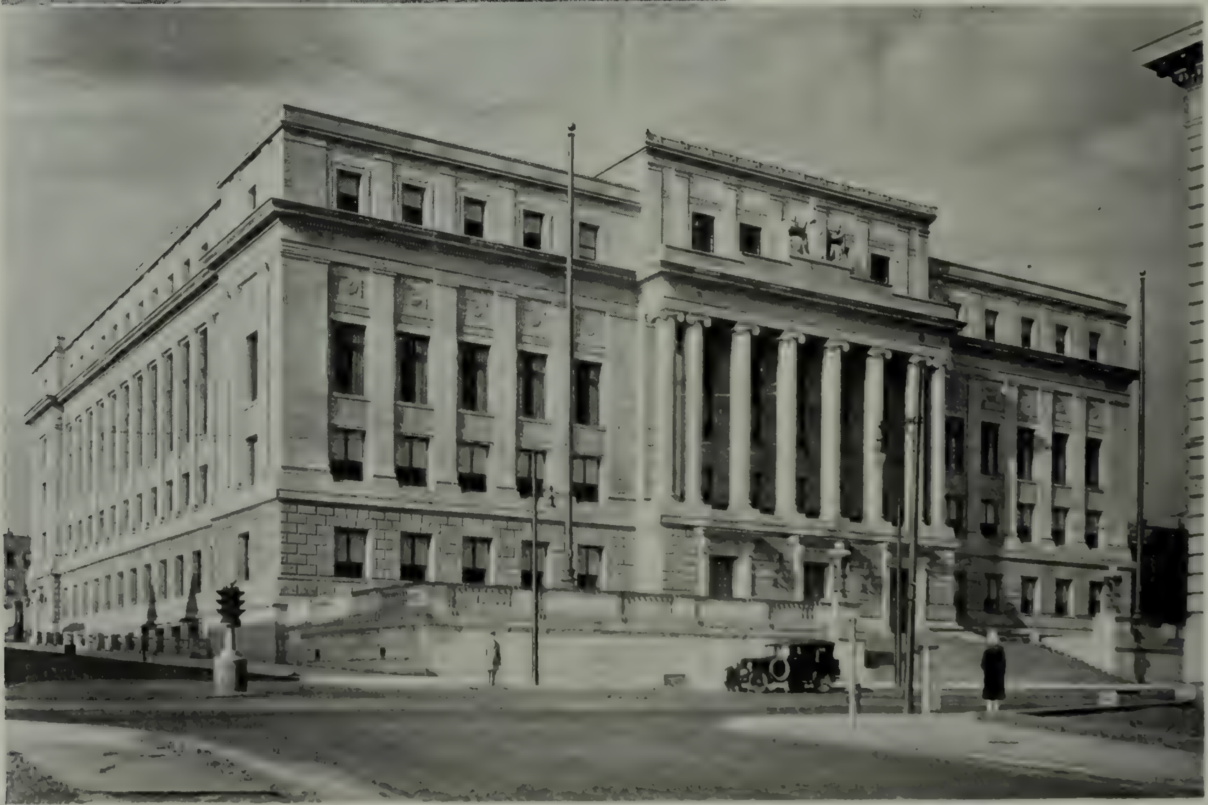
This firm, with a staff of 62, including architectural, structural, heating, plumbing, and electrical draftsmen, engineers, construction superintendents and specification writers, has designed some 257 school and institutional buildings. Among their eight normal schools the $1,000,000 project including power house and dormitory at New Britain, Conn., is noteworthy. Among their 47 high schools those at Greenwich, Conn., Newark, N. J., Great Neck, New Rochelle, Tarrytown and Tuxedo Park, New York, are noteworthy. Of their 11 junior high schools, the Emalea Pusey Warner School, Wilmington, Del., is noteworthy. This office has designed five vocational school buildings, including Essex County Girl's Vocational School, and Newark Public School of Fine and Industrial Art, both in Newark.

Among their 168 grade schools built in many states, more than 125 of all types and sizes have been constructed in Delaware, with money from the du Pont Fund, supplied by Mr. Pierre S. du Pont. Guilbert & Betelle have been the architects, since 1919, for the Delaware School Auxiliary Association which supervises the du Pont Fund.

Among the 18 institutional groups, the 14 buildings comprising the New Jersey State Reformatory for Boys, at Annandale, and the 30 buildings comprising the Third State Hospital for the Insane, Hillsdale, N. J., are noteworthy.

Among other important commissions executed by this firm are Hotel Robert Treat, Chamber of Commerce Building, Essex County Hall of Records, North Ward National Bank, Essex Club, and the Newark Memorial Hospital Buildings, all in Newark.

Mr. Betelle believes the architect should be an active factor in his community. He is intensely interested in civic affairs and for two years served as president of the Newark Chamber of Commerce. Dodge Reports is proud to have the friendship and co-operation of such leading architects as James O. Betelle, Fellow, American Institute of Architects.



Left, above, State Normal School, New Britain, Conn. Left, Essex County Hall of Records, Newark. The North Ward National Bank and the Essex Club, were cited by the Broad Street Association as the best buildings erected in Newark in 1923 and 1927, respectively.

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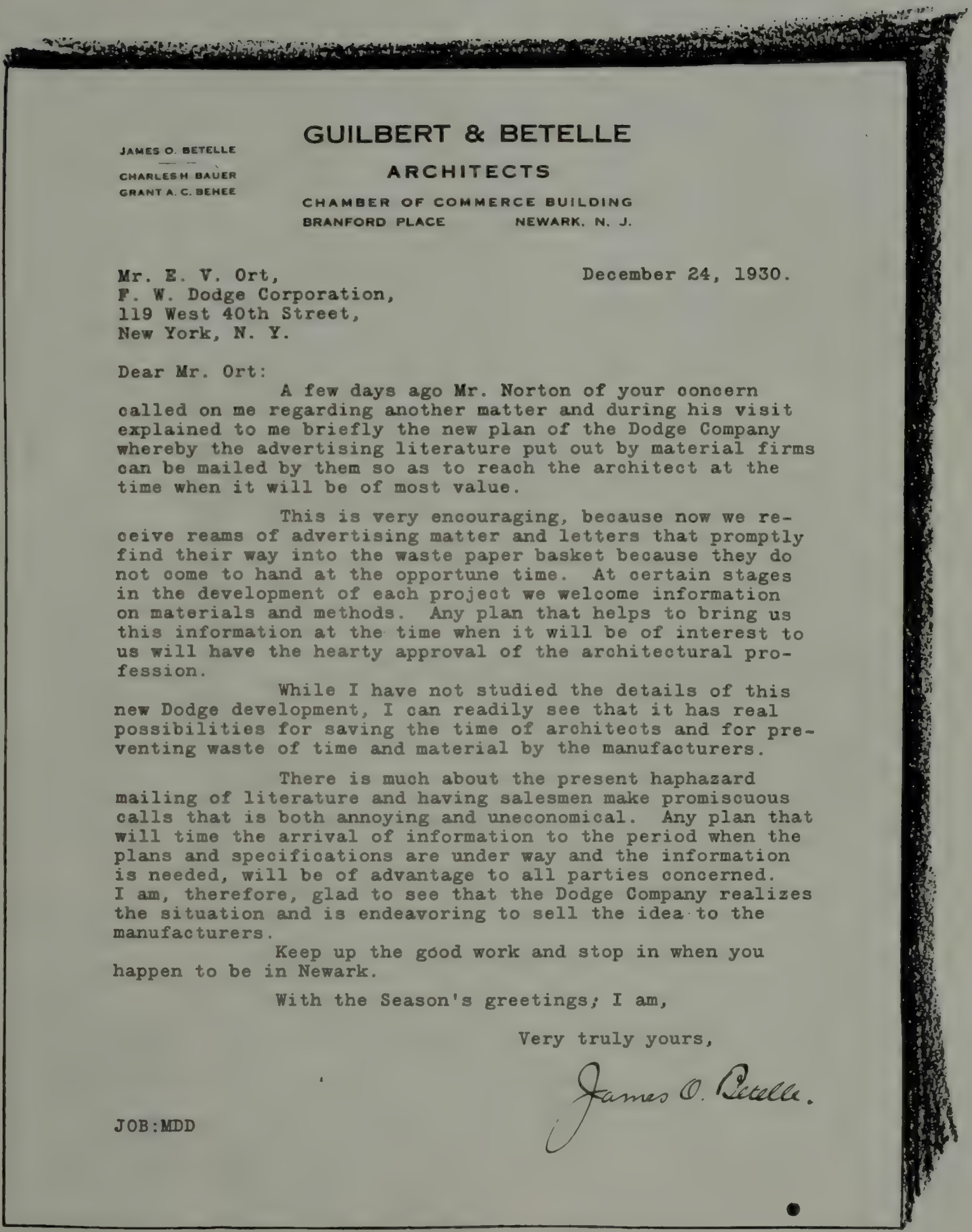

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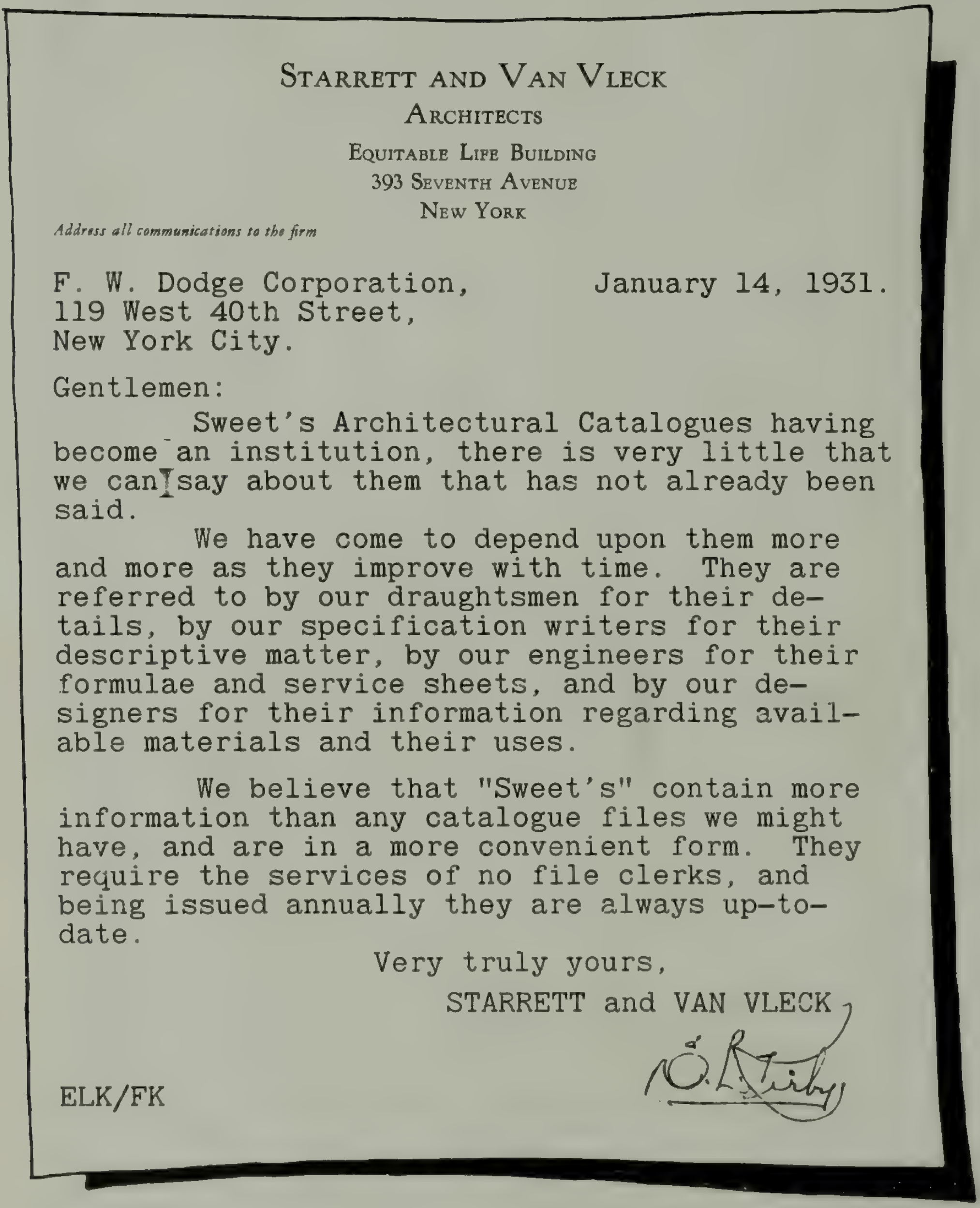

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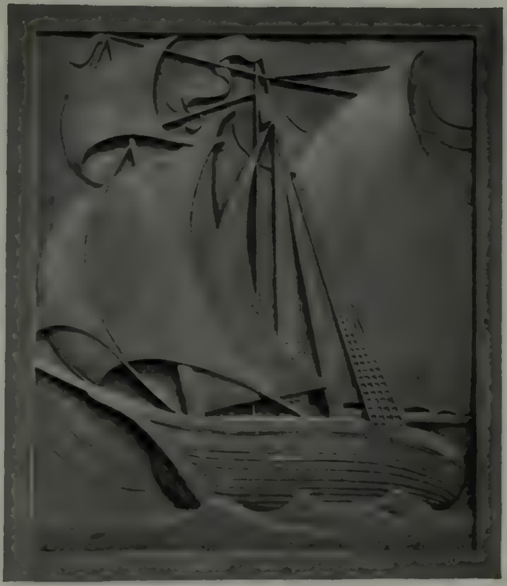

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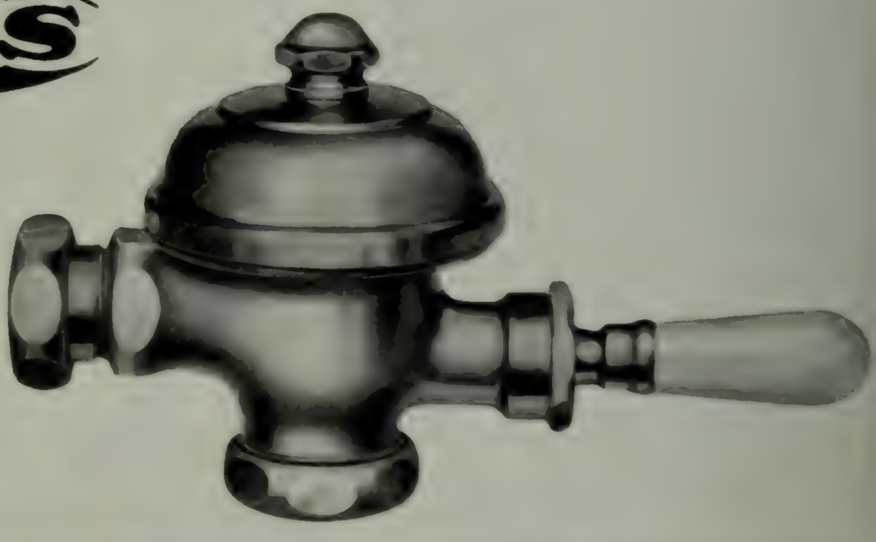

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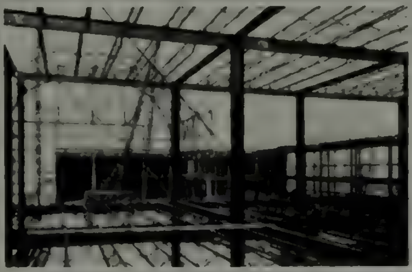

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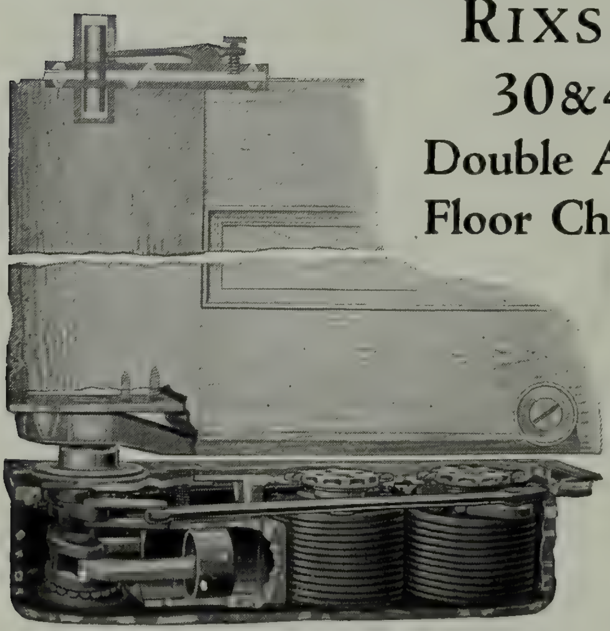

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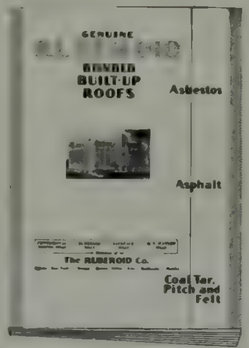

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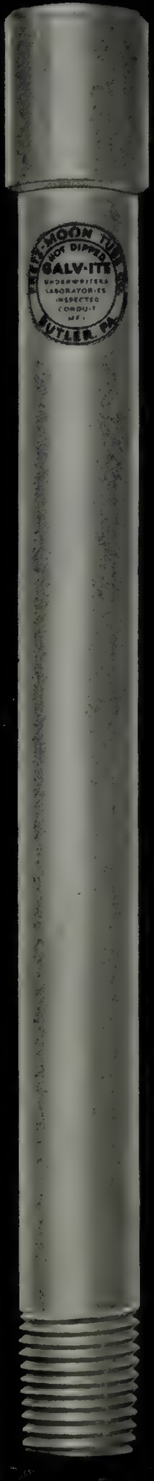

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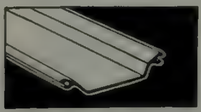
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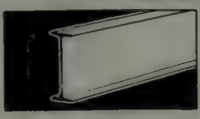
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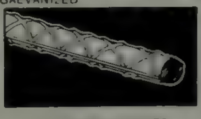
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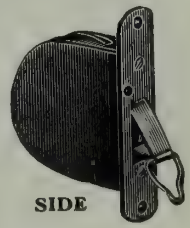

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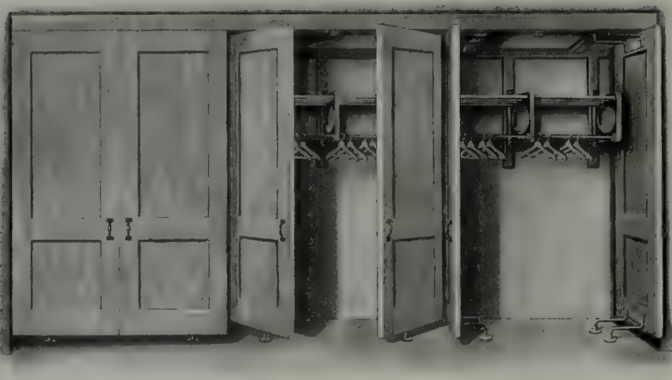

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HERE is an ideal school class-room wardrobe, low in cost yet meeting every demand of the most exacting. This wardrobe is made for plaster ends, backs, and ceilings; no jambs nor trim being required. When so desired blackboards can be furnished for the doors, giving a continuous blackboard surface.

The "Vanishing Door" hinges on which the doors are hung are made with double pivoted arms and swing the doors back into the wardrobe entirely out of the way. There are no noisy tracks nor rollers to stick or bind, nor intricate mechanism to get out of order. These hinges are guaranteed to last as long as the building.

All wardrobes are furnished complete in the knockdown, with all woodwork cut to size, and only need to be secured in place. The hinges are easier to put on than common butt hinges. The entire cost of installation is small.

Many types of school wardrobes are fully illustrated, described and detailed in Catalog "K". This catalog is of A. I. A. file size and can be had for the asking.

See Sweet's for 1931, Vol. C 4352

W. L. EVANS

Washington, Indiana, U. S. A.

VANISHING DOOR WARDROBES

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The designing and proper locating of a greenhouse is never a simple task. To facilitate the work of the architect who is unaccustomed to the peculiarities of "glass", we offer the services of our Architects' Bureau, composed of expert designers. State your problem to this bureau and let them work out a solution. Sketches and suggestions are wholly without cost or obligation to you.

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BOSTON, MASS. SCRANTON, PA. TOLEDO, OHIO
SCHENECTADY, N. Y.

King
GREENHOUSES

Which home owner is better satisfied?

YOUR greatest asset as an architect is satisfaction among your clients — the solution of the waste disposal problem is an important step in assuring satisfaction.

The Kernerator solves forever the problem of disposing of garbage, rubbish, newspapers, magazines, sweepings, tin cans, bottles, etc. To the housewife, the hopper door in the kitchen is a symbol of complete convenience.

Kernerator has become the accepted standard of incineration in the architectural profession. It is guaranteed by a financially responsible manufacturer. It is serviced through a nation-wide organization. See our catalog in Sweet's or write for A. I. A. folder.

With GAS or OIL for HEATING -*what will you do with* WASTE and RUBBISH ?

KERNER INCINERATOR COMPANY
3549 N. Richards St. *Offices in over 150 cities* Milwaukee

KERNERATOR
INCINERATION

FOR NEW AND EXISTING BUILDINGS

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Write for Peerless catalog

PEERLESS UNIT VENTILATION CO., Inc.
Pioneers in Unit Ventilation
BRIDGEPORT, CONNECTICUT

Selling Agents in Principal Cities from Coast to Coast

Did this ever happen to you?

Ah! an obsolete type masquerading as a sanitary fountain—water falls back on bubbler—dangerously unsanitary!

Right in the eye! He wanted a drink—not a shower. This happens so often because the stream is not controlled. Inconvenient—annoying!

Where's the water? And they call it a fountain! Disgusting—provoking!

More fun! Children like to play—especially with a fountain that is easy to tamper with! Messy—destructive!

So many things happen with the average fountain because of faulty design that no page advertisement can feature them all. But architects and builders, who specify and use them, know that Halsey Taylor Drinking Fountains have none of these objections. Distinctive two-stream projector means a drinking mound always hygienic and convenient to drink from without lips touching source of supply. ¶ Automatic stream control is another patented safeguard, water being uniform in height regardless of pressure variation, and the non-squirting feature is of special appeal in school installations. See 1931 Sweets for our complete catalogue . . . The Halsey W. Taylor Company, Warren, Ohio.

HALSEY TAYLOR

Drinking Fountains

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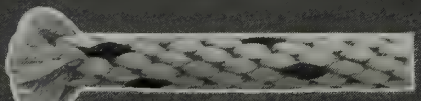

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Responsible organizations now distributing through the heating trade should investigate the Gar-Wood franchise. Write the factory for details.

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Gentlemen: Send me — without cost or obligation — a copy of "A New Principle of Generating Heat at Low Cost."

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DECEMBER 1929	MARCH 1930
JANUARY 1930	MAY 1930
JULY 1930	

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THE ARCHITECTURAL RECORD
119 West 40th Street
New York City

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●

Here inviting beauty and spick and span appearance are always insured by Monel Metal's combination of rust-immunity corrosion-resistance cleanability and steel-like strength.

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A 16-page booklet is available illustrating and describing this outstanding Monel Metal food service installation. A copy will gladly be sent on request.

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Architects: Graham, Anderson, Probst & White, Chicago, Ill.

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DISHWASHERS—Crescent Div. of Hobart Mfg. Co., Troy, Ohio.
REFRIGERATORS—"Dry-Kold" Refrigerator Co. . Niles, Mich.
BAKE OVENS—Edison Electric Appliance Co., Inc., Chicago, Ill.
SODA FOUNTAINS—The Liquid Carbonic Corp.* Chicago, Ill.
DISH CONVEYORS—Samuel Olson Co. . . . . Chicago, Ill.
EGG TIMERS—Perfect Automatic Egg Timer & Mfg. Co., Chicago, Ill.
TOASTERS—Savory, Inc. . . . . Buffalo, N. Y.
RANGES—Standard Gas Equipment Corp. . . . . Chicago, Ill.
MEAT & BREAD SLICERS—U. S. Slicing Machine Co., Chicago, Ill.
THERMOTAINERS—Waters-Genter Company, Minneapolis, Minn.

* *Soda Fountains were installed by The Liquid Carbonic Corp.*

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

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MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

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COLORFUL NATURAL STONE

ST JOSEPH'S EPISCOPAL CHURCH, DETROIT
NETTLETON & WEAVER, *Architects*

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See Our Catalog in SWEET'S

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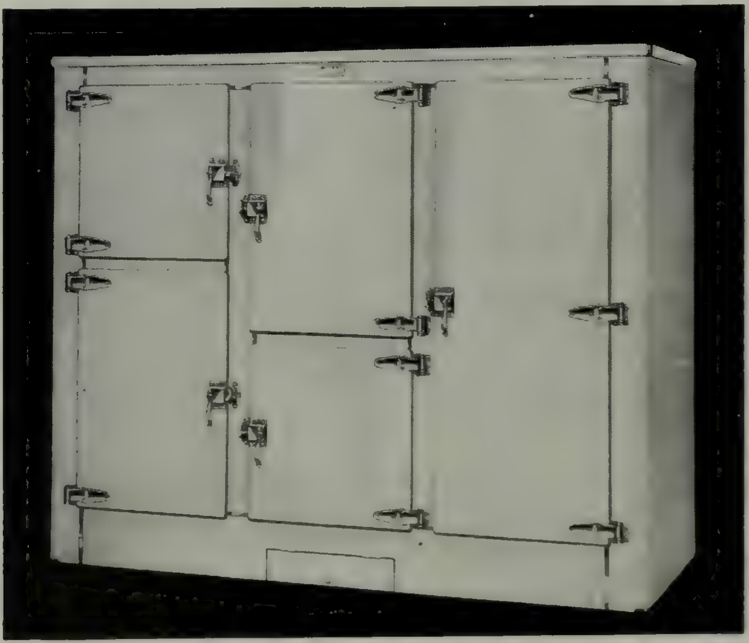

The New Model P332 is typical of a whole series of porcelain refrigerators with pure corkboard insulation developed by McCray out of 40 years' experience . . . especially for use in hotels and institutions. Architects, write for our new catalogs of refrigerators for all purposes.

McCray Refrigerator Sales Corporation, 164 Lake Street, Kendallville, Indiana. Salesrooms in All Principal Cities.

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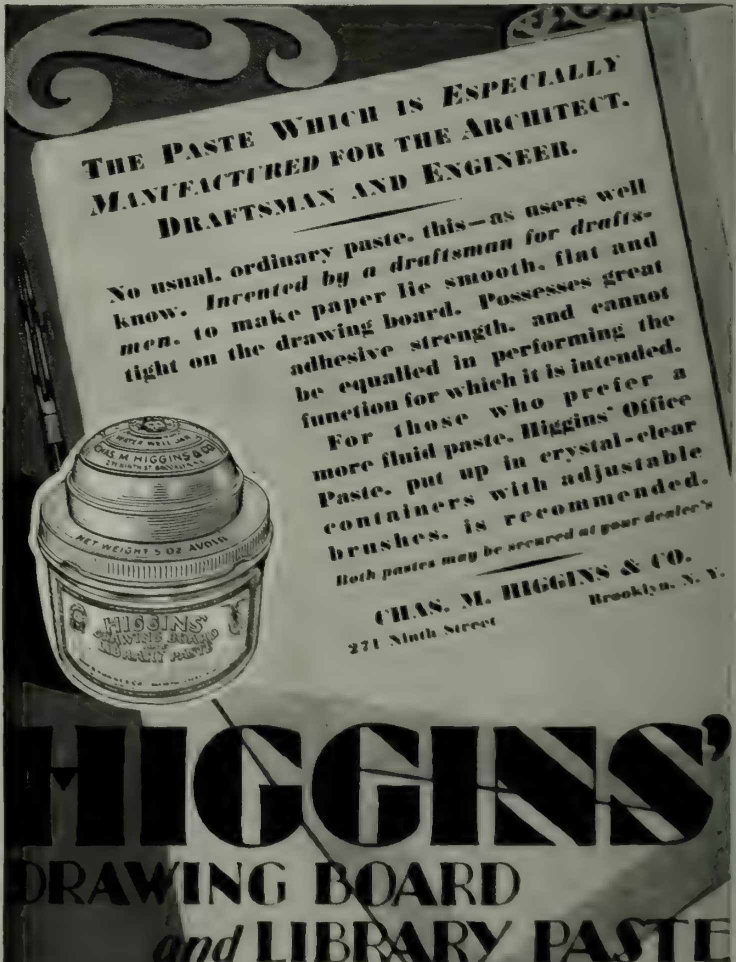

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See our catalog in Sweets.

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3591

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The Ortho-Tone Company, originators of "radio in every room" systems, for hotels, again pioneers in this field with the Ortho-Tone Pra-1-40. A machine which, though smaller, embodies all of the advantages of the larger Ortho-Tone machines. Ortho-Tone Pra-1-40 is designed for small hotels, schools, and high-class tourist camps.

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REPRODUCTIONS, authentic in design, construction and finish, of oak and pine English panelling and other interior woodwork, perfectly adapted to the architect's requirements.

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Thermostatic
Water Mixing Valves

TYPE L 9 OCTAGON DESIGN

Catalog C of Leonard Valves, showing Octagon design and Colors to match bathroom fixtures, is now ready.

Write for your copy.

LEONARD-ROOKE COMPANY
Elmwood Station Providence, R. I.

COMPOUND and PYRONO WOOD DOORS

SEE OUR CATALOG IN SWEETS
THE COMPOUND AND PYRONO DOOR CO.
ST. JOSEPH, MICH.

FIRE-RETARDING, SOUND INSULATED AND KEY-VENEERED DOORS

Specified for

PERMANENCE

North side unit of Youngstown Hospital, piped with Youngstown steel pipe in both plumbing and heating systems . . . and using Youngstown Buckeye Conduit in the electrical installation.

Architect—
ALBERT KAHN—Detroit

*General Contractor—***JOS. BUCHHEIT SONS CO., —Youngstown, Ohio**

*Plumbing & Heating Contractor—***J. W. SCHOLL CO.—Youngstown. O.**

Electrical Contractor—
GEO. A. WEBSTER ELECTRIC COMPANY —Youngstown, Ohio

IN THOUSANDS OF BUILDINGS from coast to coast, Youngstown steel pipe has been specified and installed as the soundest insurance of endurance in a pipe installation.

Leading architects know from long experience that Youngstown in the specifications means permanence in the installation . . . whether used in plumbing, heating, sprinkler or refrigeration systems. Youngstown pipe is manufactured from the finest grade of steel, to the highest quality standards, by specialists in steel fabrication; it is pipe that is worthy of installation in the finest buildings and is stocked by leading jobbers everywhere.

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These are days of high land values when apartments are leased from plans, offices rented before old buildings are demolished and occupancy planned to the day. Decorating must be done when the building is finished. There is no time to wait for the building to get through cracking. With Clinton Wire Lath cracking is reduced to a minimum. It's the lath to use when the finish costs real money.

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WICKWIRE SPENCER STEEL CO.

CLINTON WIRE LATH

CLASSIFIED DIRECTORY OF ADVERTISERS

Alphabetical Index to Advertisers, Page 168

After reviewing advertisements in this issue—consult Sweet's Architectural Catalogues for 1931 for up-to-date catalogues and specifications on the products of most of the manufacturers.

Acid Proof Chemical Stoneware
- Knight, Maurice A.

Acoustics
- Armstrong Cork & Insulation Co.
- Boston Acoustical Eng. Division of Housing Company
- Guastavino, R., Co.
- Johns-Manville Corp.
- U. S. Gypsum Co.

Air Conditioner
- American Blower Co.
- Carrier Engineering Corp.

Aluminum
- Aluminium Co. of America
- British Aluminium Co.

Architectural Supplies
- American Pencil Co.
- Higgins, Chas. M., & Co.

Asbestos—Johns-Manville Corporation

Automatic Sprinklers
- Grinnell Co., Inc.

Bakelite
- Bakelite Corporation

Basement, Windows—Steel
- Detroit Steel Products Co.
- Kalman Steel Co.
- Truscon Steel Company

Beads—Corner Metal
- Kalman Steel Co.
- Milcor Steel Co.
- Truscon Steel Company

Beams, Angles, Channels, Etc.
- Bethlehem Steel Co.
- Carnegie Steel Company
- Illinois Steel Co.
- Jones & Laughlin Steel Corp.

Boilers—American Gas Products Co.
- American Radiator Co.
- Dahlquist Mfg. Co.
- Heggie-Simplex Boiler Co.
- Pierce, Butler & Pierce Mfg. Co.
- Smith, H. B., Company, The, Inc.
- Wood, Gar, Engineering Co.

Bolts—Door—Corbin, P. & F.

Brass and Bronze
- See "Ornamental Metal"

Bridges—Steel—American Bridge Co.
- Bethlehem Steel Co.

Building Paper
- Angier Corporation

Buildings—Steel
- Carnegie Steel Company
- Illinois Steel Co.

Butts—Corbin, P. & F.
- Stanley Works

Cabinet Work
- Grand Rapids Store Equipment Corp.

Cabinets—Kitchen
- Olean Metal Cabinet Works, Inc.

Cabinets—Toilet Paper
- A. P. W. Paper Co.

Casement Operators—Rixson, Oscar C., Company

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BY THE
Kawneer
COMPANY
NILES, MICHIGAN
and subsidiaries

PRODUCTS
RUSTLESS METAL SEALAIR WINDOWS - DOORS - ARCHITECTURAL CASTINGS AND STORE FRONTS

Amazingly QUIET

. . . this low cost closet

See T/N on display at the Architects Building, 101 Park Avenue, New York City. Write for free Architect's Filing Data.

Write for free filing data

T/N flushes with a thorough swirling action that is amazingly quiet. Tank and bowl are of one piece two-fired vitreous china; no ugly wall tank to take up space. The modern, stream-lined T/N makes the extra toilet room economical and practical.

T/N will not overflow. Nor will it allow water to seep back into household supply lines. It installs with two connections and minimum space. And the high quality T/N's cost is surprisingly low.

ONE PIECE WATER CLOSET SILENT NON OVERFLOW
Patented, Pat. Pend.

W. A. CASE & SON MANUFACTURING CO.
Established 1853
Dept. 412, 220 Delaware Avenue, Buffalo, N. Y.

T/N

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Casements—Bayley, William, Co.
Crittall Casement Window Co.
Detroit Steel Products Co.
International Casement Co.
Mesker Bros. Iron Company
Michaels Art Bronze Co.
Truscon Steel Company

Cast Stone
Cast Stone Institute

Cellar Drainer
Penberthy Injector Co.

Cement—Louisville Cement Company
Medusa Portland Cement Co.
Portland Cement Association
Universal Atlas Cement Co.

Cement White
Medusa Portland Cement Co.

Chain Sash
Detroit Steel Products Co.
Smith & Egge Mfg. Co.

Channels—Carnegie Steel Co.
Illinois Steel Co.
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Armstrong Cork Company, Floor Division
Congoleum-Nairn, Inc.

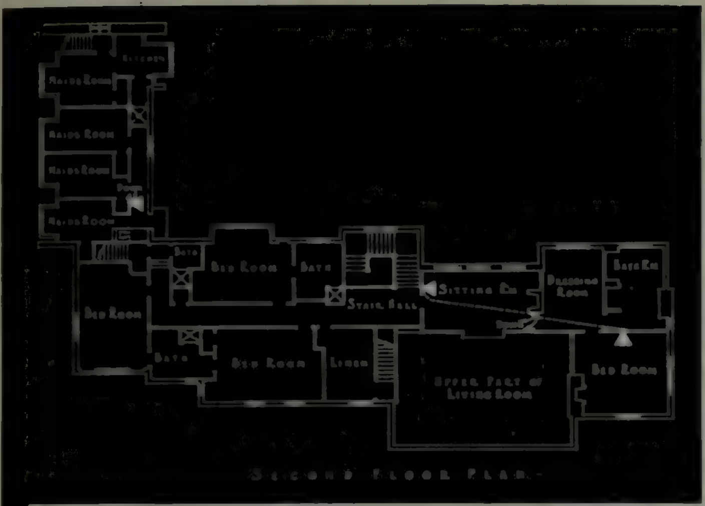
Corkboard
Armstrong Cork & Insulation Co.

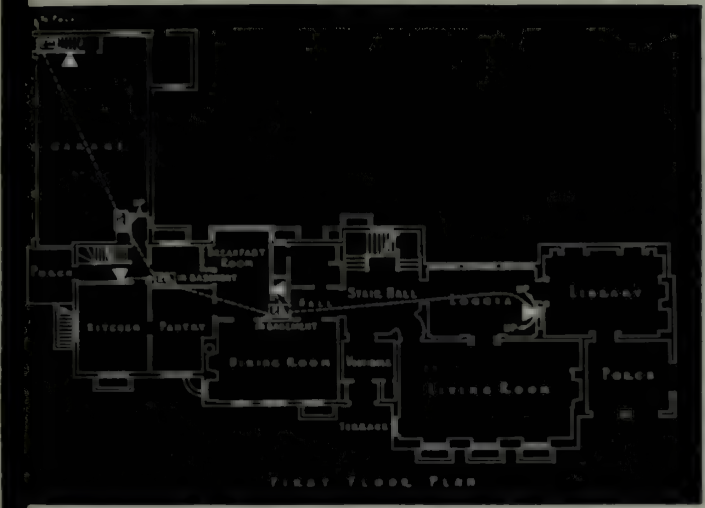
Covering—Pipe and Boiler
Armstrong Cork & Insulation Co
Johns-Manville Corporation

Door Checks
Independent Lock Co.

Door Closers—Corbin, P. & F.
Sargent & Company
Yale & Towne Mfg. Co.

Door and Window Frames
Andersen Frame Corp.





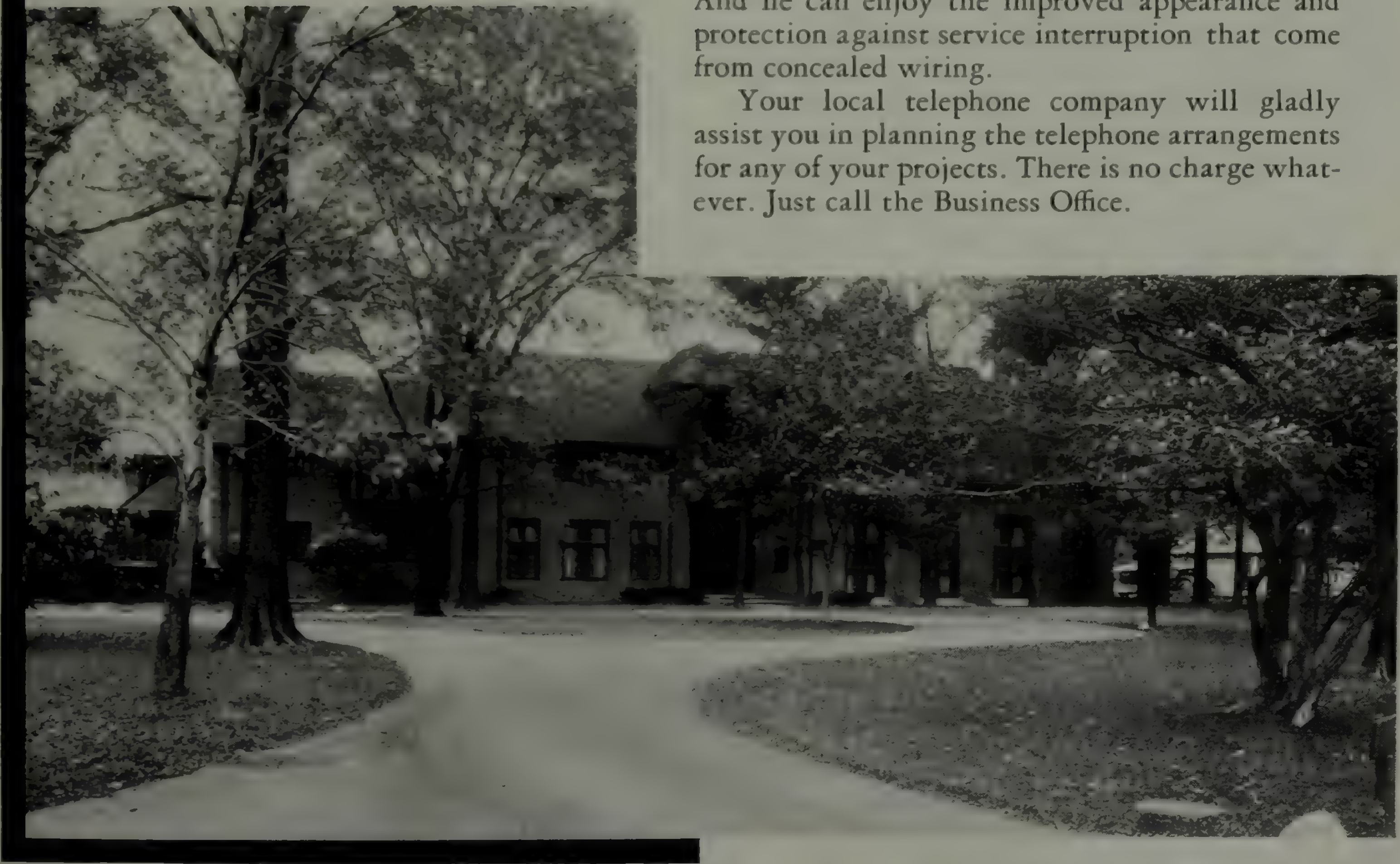
TELEPHONE CONVENIENCE CAN BE PLANNED TO MEET FUTURE REQUIREMENTS AS WELL AS PRESENT NEEDS

Distinction in a house is as much a matter of arrangement inside as of appearance outside. Every added convenience contributes to it. And many architects consider *telephone* convenience especially important.

Telephone convenience consists simply in having *enough* telephones—in living-room, library, bedroom, boudoir, kitchen and laundry—wherever they will save time and energy. It is as properly a part of the small home as of the large residence. It can be provided for in advance, by specifying conduit for telephone wires within walls and floors.

That conduit permits the owner to have telephone outlets wherever he wants them. He can change them or add to them as occasion demands. And he can enjoy the improved appearance and protection against service interruption that come from concealed wiring.

Your local telephone company will gladly assist you in planning the telephone arrangements for any of your projects. There is no charge whatever. Just call the Business Office.



Eight telephone outlets, including one in the basement, and an inter-communicating system, provide suitable telephone convenience in the residence of Mr. Henry P. Williams, 180 *Provencal Road, Village of Grosse Pointe Farms, Michigan, as shown above.* Hugh T. Keyes, Detroit, *Architect.*

LEGEND
◀ TELEPHONE OUTLET
- - - - - CONDUIT
▭ PROTECTOR CABINET
▭ PULL BOX

House in Portland, Ore., Kirtland Cutter, Architect. Cabot's Blended Roof Shakes; Cabot's Old Virginia White on brickwork. Cabot's Quilt in walls to deaden noise and reduce cost of heating installation and fuel bills.

Saves Their Money

Now is a moment when an architect can as easily make a friend for life as a foe.

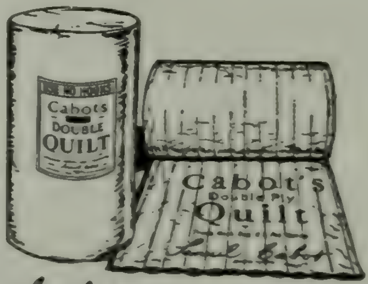
All Cabot's house building specialties are planned and manufactured in the true spirit of New England thrift—the thriftiest thrift in the world!

Highest quality materials, simplest and most efficient manufacturing methods; put these two things together, mark the finished product at a fair and reasonable price, hold the goodwill of the customer by supplying service at all times—and you have a formula for business success that has kept Samuel Cabot, Inc., alive and growing for generations.

You save your client's money when you deal with such a firm; and every satisfied client can bring you a dozen more.

Clip Coupon below, or write to

Cabot's "Quilt"



Samuel Cabot Inc.

141 Milk Street, Boston, Mass.
Gentlemen: Please send me your new
Building Specialties Handbook

Name ______________________________

Address ______________________________ AR-2-31

Doors—Bayley, William, Company
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    Dahlstrom Metallic Door Co.
    Detroit Steel Products Co.
    International Casement Co.
    Kalman Steel Co.
    Kawneer Company
    Kinnear Mfg. Co.
    Michaels Art Bronze Co.
    Peelle Company, The
    Sanymetal Products Co.
    Security Fire Door Co.
    Thorp Fire Proof Door Company

Drains—Josam Mfg. Co.

Drawing Inks—Higgins, Chas. M., & Co.

Dumb Waiters
    Sedgwick Machine Works

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    Graybar Electric Co.
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    Imperial Electric Co.
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    Westinghouse Electric & Mfg. Co.

Elevator Doors
    Michaels Art Bronze Co.
    Peelle Company, The
    Security Fire Door Co.

Elevators
    Otis Elevator Company
    Sedgwick Machine Works
    Westinghouse Electric Elevator Co.

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    Du Pont de Nemours, E. I., & Co., Inc.
    Pratt & Lambert, Inc.
    U.S. Gutta Percha Paint Co.

Engineers—Inspection
    Robert M. Hunt Co.

Expanded Casings—Milcor Steel Co.

Expanded Metal
    Truscon Steel Company

Fence Post—Steel
    American Steel & Wire Co.

Fences—American Steel & Wire Co.
    Fiske, J. W., Iron Works

Fire Exit Devices
    Vonnegut Hardware Company

Fire Extinguishers—Pyrene Mfg. Co.

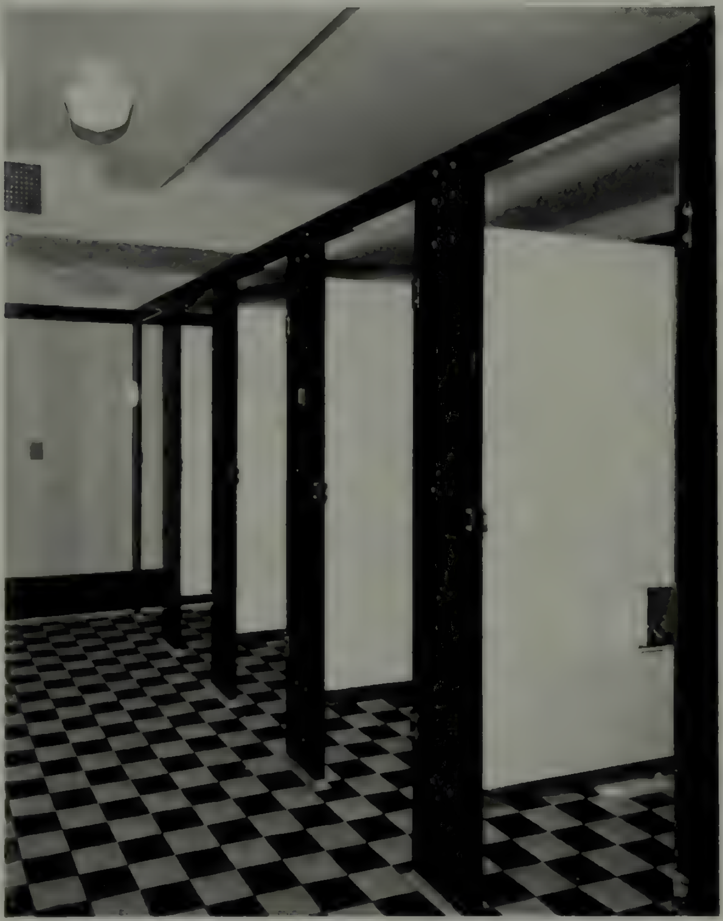
Fireplace Construction—Covert, H. W., Co.
    Heatilator Company

Fireproof Doors, Shutters and Windows
    Compound & Pyrono Door Co.
    Dahlstrom Metallic Door Co.
    Detroit Steel Products Co.
    Kawneer Company
    Mesker Bros. Iron Company
    Peelle Company, The
    Thorp Fire Proof Door Company
    Truscon Steel Company

Modern Studies in BLACK AND WHITE Carrara

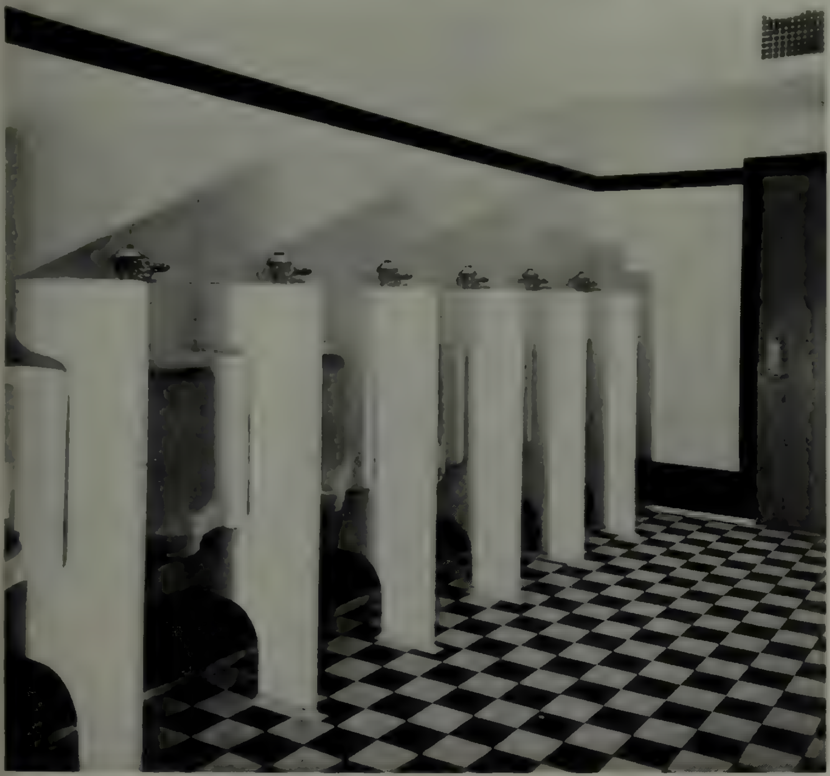
HERE is a splendid example of how Carrara Structural Glass fits into modern building design and construction. Note the striking effect in black and white. Even in these pictures taken in the Chicago Board of Trade Building you gain an idea of the brilliant Carrara walls and partitions, with their polished, mirror-like surfaces.

But more than this, Carrara gives solidity and permanence to the construction. It does not deteriorate in use. It does not check or craze. It resists penetration of moisture and liquids. It does not absorb odors. It is impervious to pencil marks and is extremely difficult to deface in other ways. Its hard, highly polished surface can easily be kept spotless. Only soap and water are necessary.



No material of similar nature equals the service of Carrara in toilets and washrooms. But this is only one of many uses. Carrara is capable of great variety in treatment and handling. It is an ideal material for the modern architect and decorator.

Carrara Glass is made in three types — polished white Carrara and polished black Carrara. Also Frostex, which is white with a slightly rippled finish. For more complete information regarding this modern structural and decorative glass, address Pittsburgh Plate Glass Company, Carrara Department, Grant Building, Pittsburgh, Pa.



The unusual structural and decorative qualities of both black and white Carrara are shown in the two pictures of the installation in the Chicago Board of Trade Building. Architects—Holabird & Root. Builder—Hegeman-Harris Co., Inc.

CARRARA

Modern Structural Glass

Home of Thomas Taggart, Jr., French Lick Springs, Ind., equipped with "KANE QUALITY" *Screens* and *Weather Strips.* Architect: D. A. Bohlen & Son. Contractor: Wm. P. Jungclaus Co.

"KANE QUALITY"

Wood or Metal . . . Frame and Roll

Rustless Insect Screens

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Guaranteed to Fit

"KANE QUALITY" *Rustless Insect Screens* and *Screen Doors* are made only to individual measurements of the openings for which they are intended, and fitted by experienced screen specialists. Hence a perfect fit is guaranteed. They are furnished in any desired color to harmonize or contrast with the trim, thus enhancing the beauty of the building and carrying out the architect's aesthetic ideas.

"KANE QUALITY" *Screens* are strongly made of the most durable materials. Only Anaconda Bronze screen fabric is used. Wood frames are of selected lumber, thoroughly kiln-dried. Corners are full mortise and tenon and moisture proof glued. Moldings are fastened with brass brads. Metal frames are of either enduring bronze or galvanized steel. All "KANE QUALITY" *Screens* are rewireable in fact, not in theory alone.

We recommend the installation of "KANE QUALITY" *Screens* as soon as the openings are ready for measurement. This protects interior finishes from insect marks, etc., and eliminates the disturbance of the owner necessitated when screens are installed after the building is completed.

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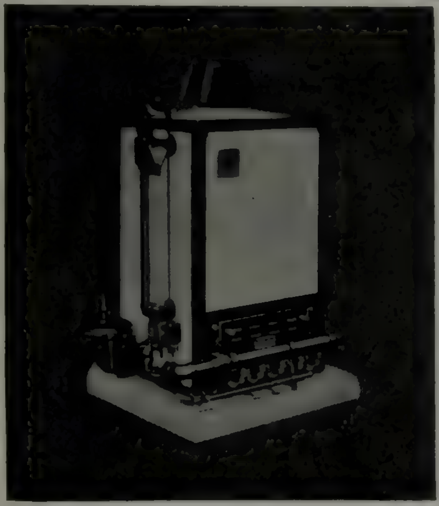

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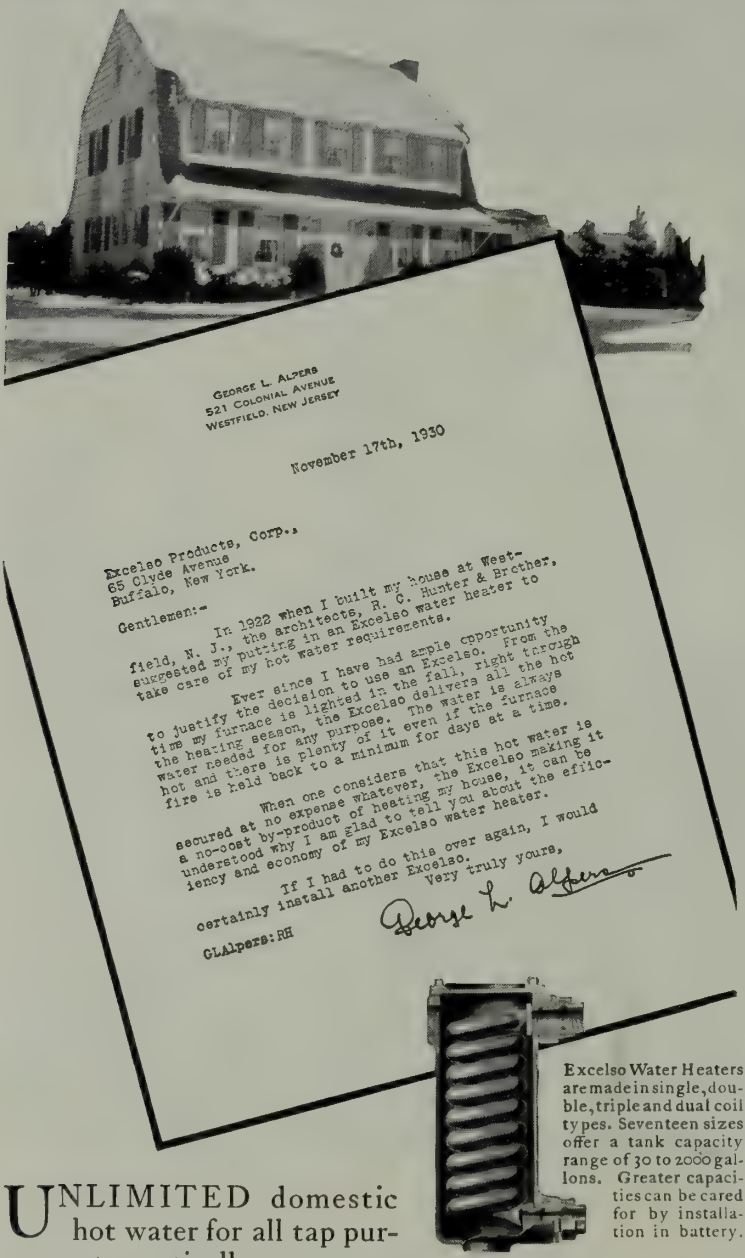

GEORGE L. ALPERS
521 COLONIAL AVENUE
WESTFIELD, NEW JERSEY

November 17th, 1930

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65 Clyde Avenue
Buffalo, New York.

Gentlemen:-

In 1922 when I built my house at Westfield, N. J., the architects, R. C. Hunter & Brother, suggested my putting in an Excelso water heater to take care of my hot water requirements.

Ever since I have had ample opportunity to justify the decision to use an Excelso. From the time my furnace is lighted in the fall, right through the heating season, the Excelso delivers all the hot water needed for any purpose. The water is always hot and there is plenty of it even if the furnace fire is held back to a minimum for days at a time.

When one considers that this hot water is secured at no expense whatever, the Excelso making it a no-cost by-product of heating my house, it can be understood why I am glad to tell you about the efficiency and economy of my Excelso water heater.

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Excelso Water Heaters are made in single, double, triple and dual coil types. Seventeen sizes offer a tank capacity range of 30 to 2000 gallons. Greater capacities can be cared for by installation in battery.

UNLIMITED domestic hot water for all tap purposes at practically no cost as long as the steam or vapor heating boiler is being fired—trouble-free operation year in and year out without repairs or attention—that is the EXCELSO story. Unqualified owner satisfaction with nearly 800,000 installations, in both large and small buildings old or new, proves EXCELSO dependability and economy without question.

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Glazed with
Libbey-Owens-Ford Glass

In home planning, today, windows are receiving unusual attention, for they contribute more to making a home truly beautiful and truly livable than any other single factor . . . ¶ But to achieve the utmost in window beauty it is important to select only the highest quality glass. It is for this reason architects are according an overwhelming preference to Libbey-Owens-Ford Glass, today—just as they have for over fourteen years. Libbey-Owens-Ford Glass possesses a rich, sparkling lustre of rare and permanent beauty—it is truly flat, without bow, and exceptionally clear . . . ¶ To make sure the windows in your homes add everything possible in the way of charm and beauty, insist that they be glazed with Libbey-Owens-Ford "A" quality glass. For your identification and protection, each light bears the familiar L·O·F label.

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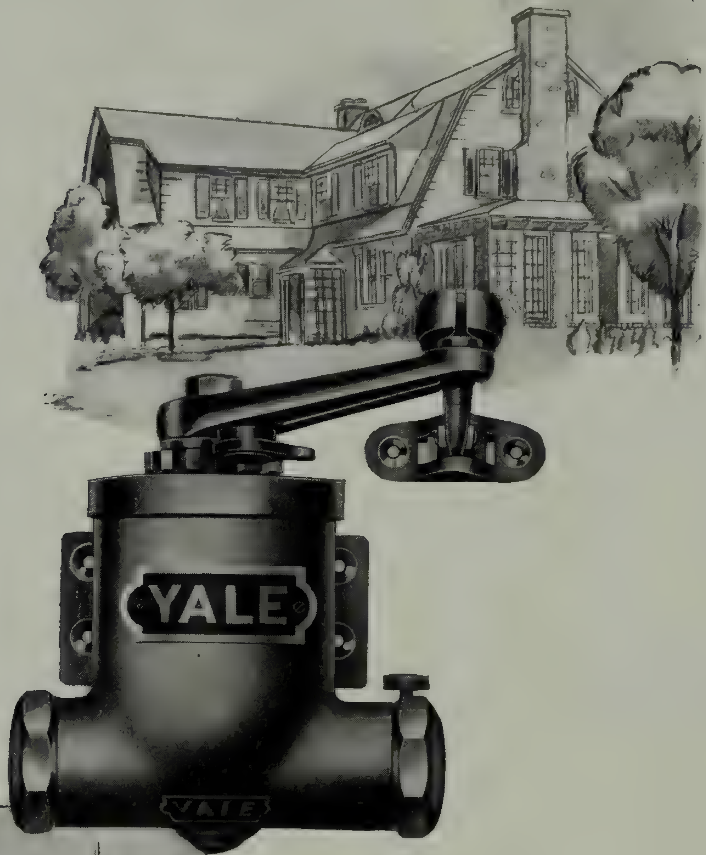

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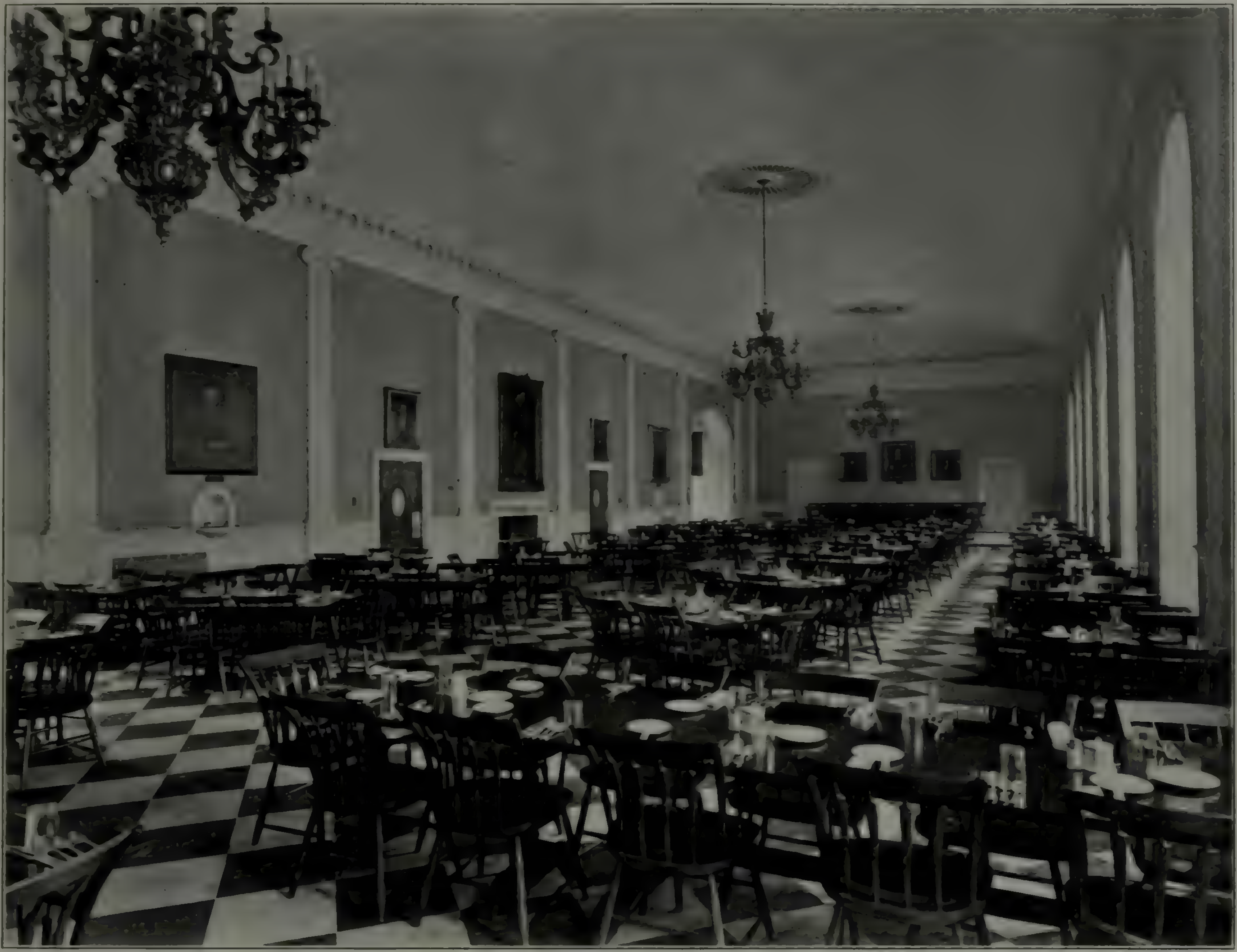

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Architects

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IN addition to the ceiling of the above room, AKOUSTOLITH Plaster has been used in more than fifteen buildings at Harvard University since 1925, including dining halls, libraries, lecture halls, swimming pools and commons rooms.

AKOUSTOLITH is a permanent, fireproof, genuine masonry material easily colored integrally or by the painting contractor without impairing its efficiency. The method of application assures the highest coefficient of absorption, on actual installations, of any acoustical plaster.

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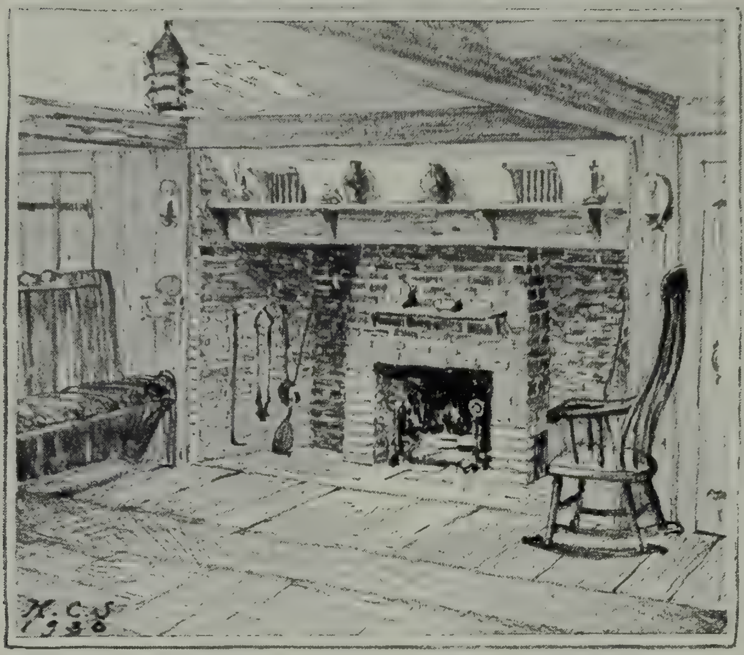
A Heatilator Fireplace



By WALTER B. KIRBY

Fireplace shown above, by WALTER B. KIRBY, *A. I. A., is one of a series of designs by eminent architects, showing fireplaces that combine the practicability of modern Heatilator construction with the charm of period inspiration.* MR. KIRBY *says:*

"The fireplace is the center of family life. However small the allowance for the house may be, enough should certainly be spent on the fireplace to make it homelike and thoroughly practical. On that basis the fireplace shown in my sketch, which most people would expect to find only in a costly home, could in fact be reproduced in homes whose total cost was only a very few thousand dollars.

"I think that the Heatilator serves a long-felt need, in assuring flawless construction by the mason, smokeless operation, and a very desirable source of extra heat. As the Heatilator combines in one unit, parts that would need to be bought anyway, for a fireplace of old style construction, the apparent extra cost of using a Heatilator in my fireplace is largely offset by actual savings in materials and labor."

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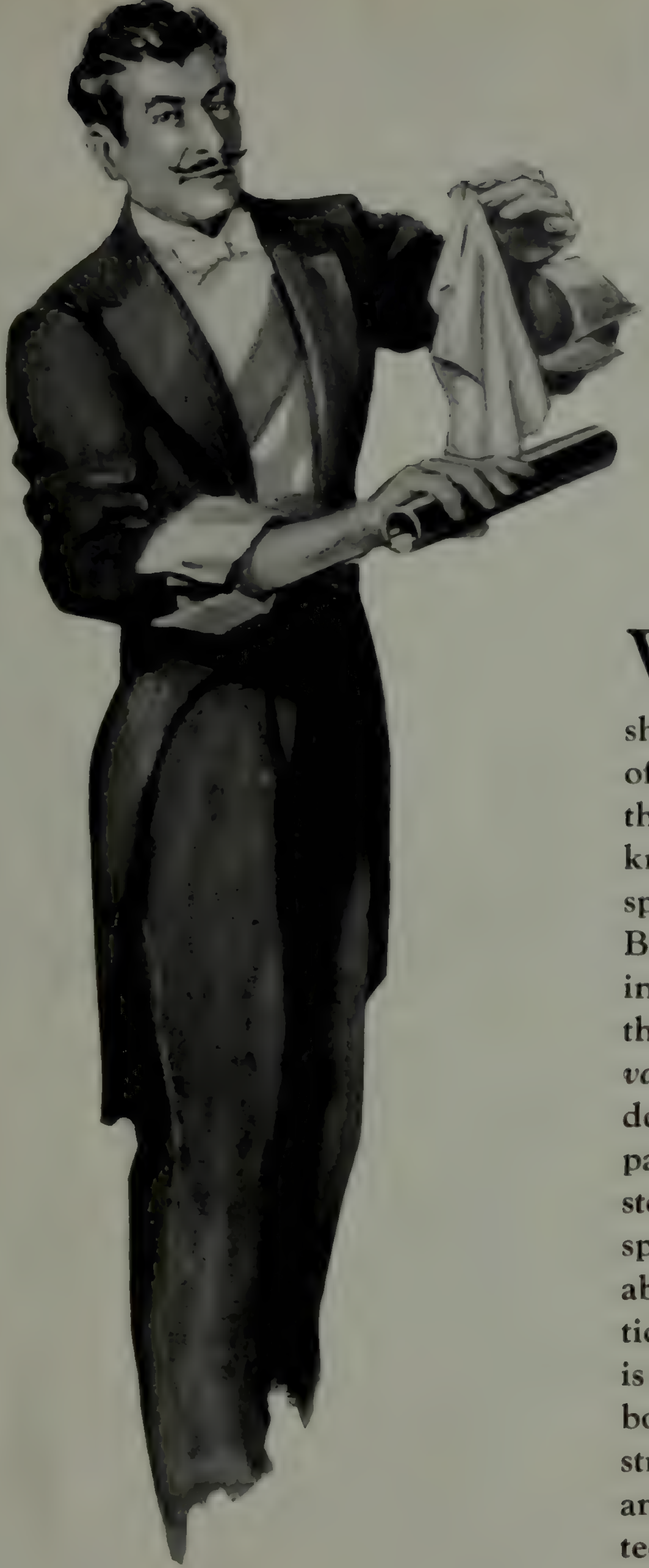


Hey — *presto!*

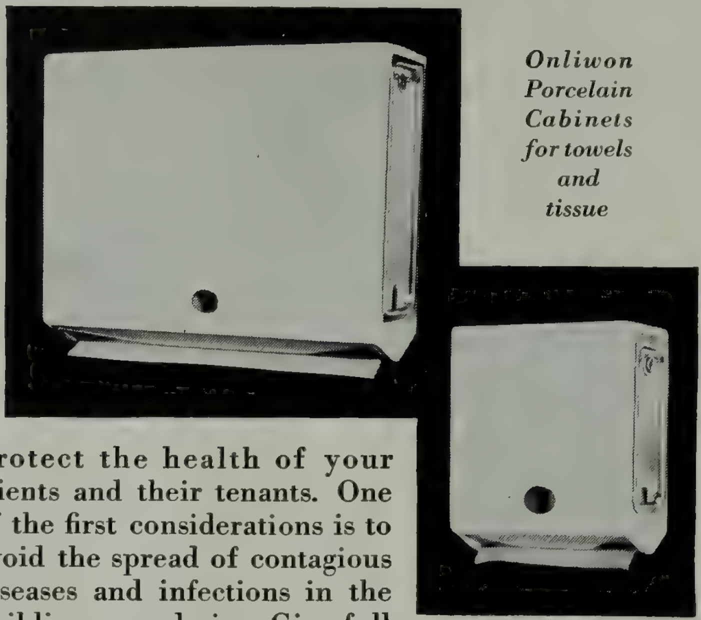
Introducing the big handkerchief trick ...*it goes in* WHITE *and comes out* VARIEGATED

WHEN Mysterioso the Great, that outstanding exponent of the prestidigitatory art, shoves a snow-white handkerchief into one end of a tube and pulls out a spotted bandanna from the other, you are not fooled. Your neighbour knows how it is done and will explain it on the spot in an excited whisper if you will let him. But *nobody* can explain why buildings modeled in snow-white plaster are so often pushed through the metaphorical tube of production, to come out *variegated.* As a matter of fact, architects who design in the modern style with vast wall expanses and sweeping vertical lines, are not using stone which is uneven in tint and tone—they specify one whose warm, creamy lightness is absolutely uniform. The greatest recommendation of Victor Select and Standard Buff Limestone is its uniform, creamy tone—there are no checkerboard variations in tint and color to camouflage structural lines and offsets, kill carving detail and reduce the effectiveness of modern architectural design. Furthermore, the supply of Victor Buff Limestone is virtually unlimited—an important point where the building of today will tomorrow be surrounded by others that must necessarily be in harmony with it.

Our Catalogue is filed in
Sweet's for 1931, Vol. A, page 618.

VICTOR OOLITIC STONE CO.

Bloomington, Indiana



SPECIFY
SAFE
WASHROOMS

Onliwon Porcelain Cabinets for towels and tissue

Protect the health of your clients and their tenants. One of the first considerations is to avoid the spread of contagious diseases and infections in the buildings you design. Give full heed to the washrooms for there the dangers of contagion are rampant through the use of the common, insanitary cloth towels and ordinary, harsh toilet paper.

Recommend *Onliwon Cabinets* for *Onliwon Towels* and *Toilet Tissue.* Onliwon Cabinets come in such an intelligent variety, and are so practical, economical and sanitary, that architects everywhere endorse them. These cabinets protect both the Onliwon Towels and Toilet Tissue from dust, dirt and other contamination. Onliwon Toilet Tissue, interfolded, is strong, pure and non-irritating. It passes every hygienic test.

Onliwon Paper Towels, besides being sanitary, really save money. They are double-folded, which gives them double strength and double absorbency. Onliwon Towels have from 10% to 58% more surface area than any other paper towels. The average person does not need more than one to completely dry the hands.

Onliwon Cabinets promote economy, as well as guard health. They will not release more than one towel or two sheets of toilet tissue at a time. Waste and theft are avoided.

● **For further information on Onliwon Cabinets consult page D-5092 of Sweets Architectural Catalogue, or write to the A. P. W. Paper Co., Albany, N. Y.**

A. P. W. is also the largest manufacturer of single fold towels as well as the oldest manufacturer of roll toilet tissues.

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AND TOILET TISSUE

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A New Metal Cornice With Expansion Wings

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Permanently Keyed to the Plaster on Ceiling and Wall

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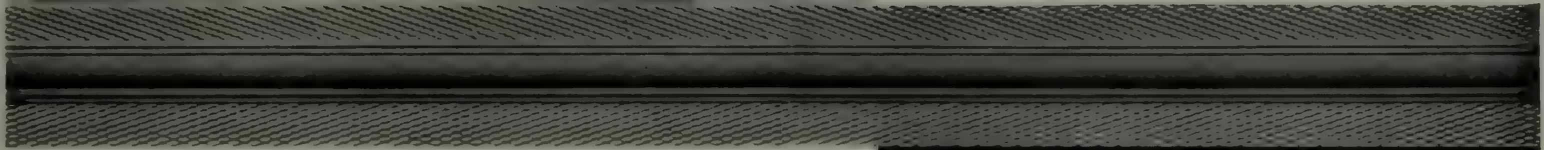

Every architect will appreciate the advantages of the new metal cornice now offered by *Milcor.*

Being made of metal, this cornice will not crack. Having the famous *Milcor* expansion wings at each side, cornice cannot pull away from the plastering. The plaster is reinforced right up to the edge of the cornice.

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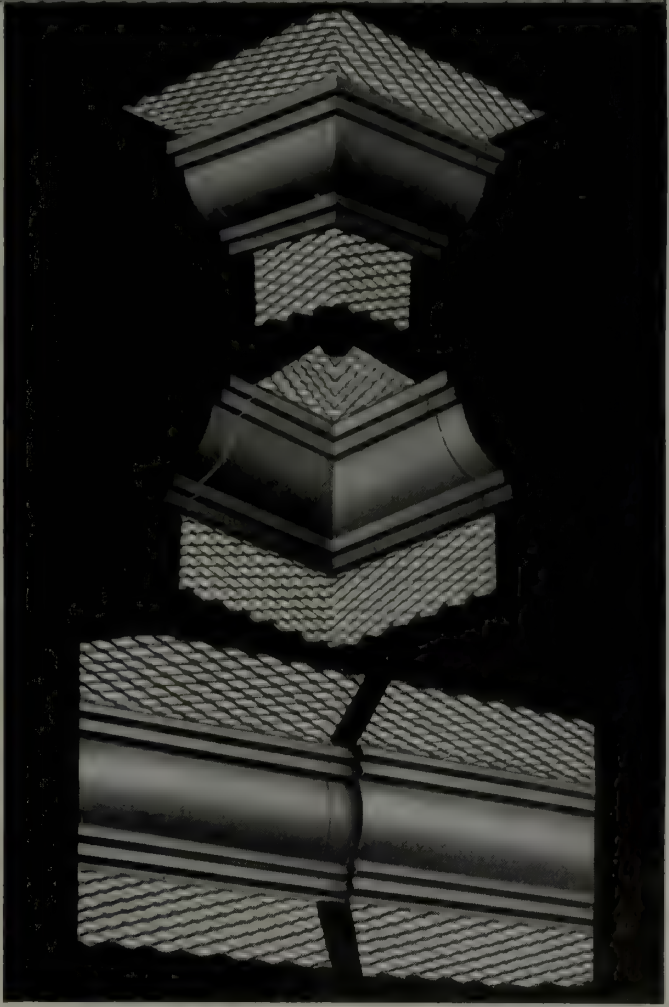

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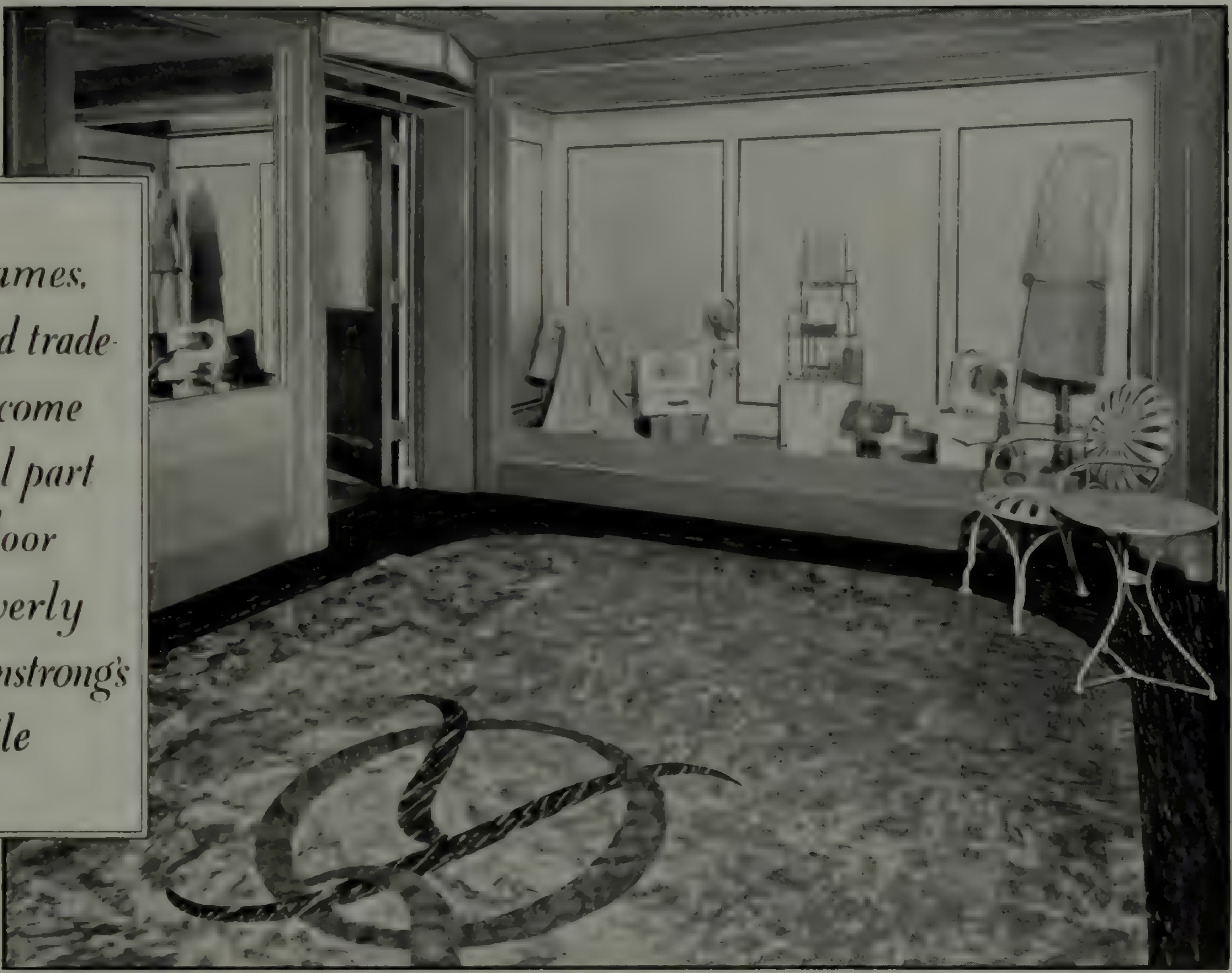

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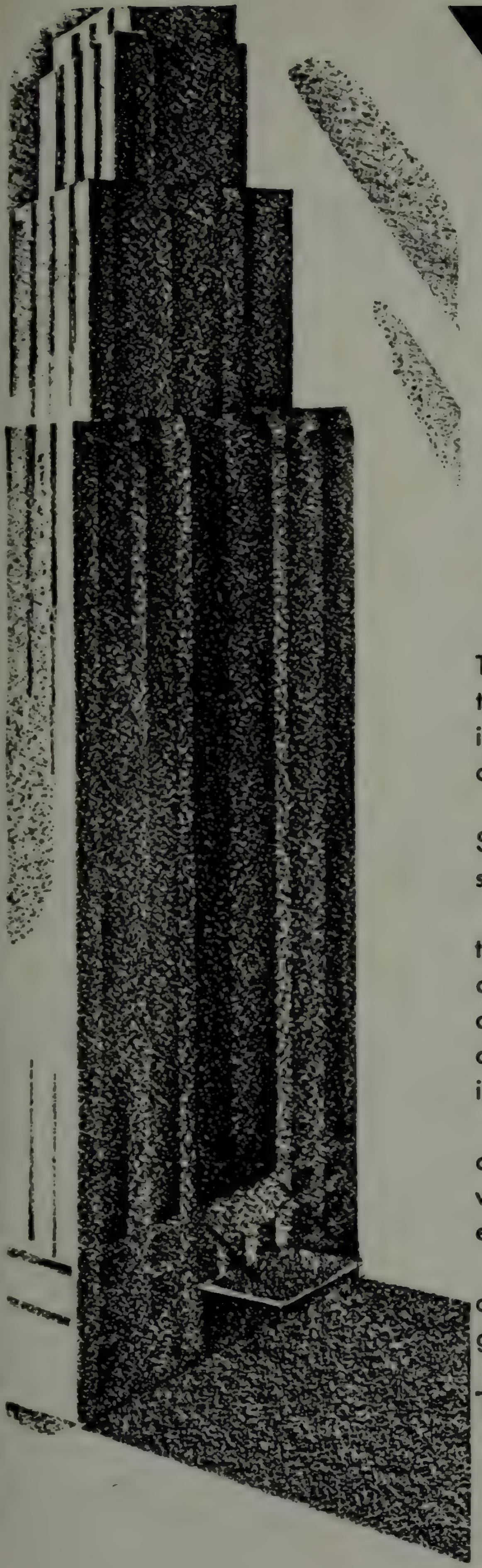

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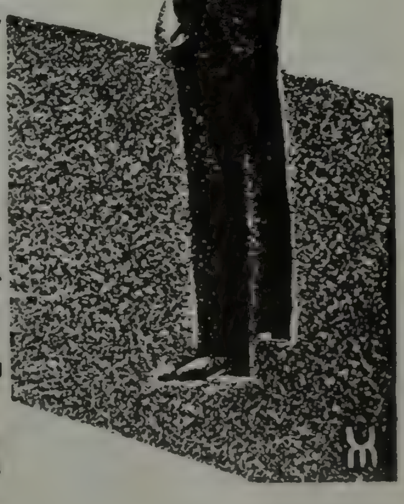

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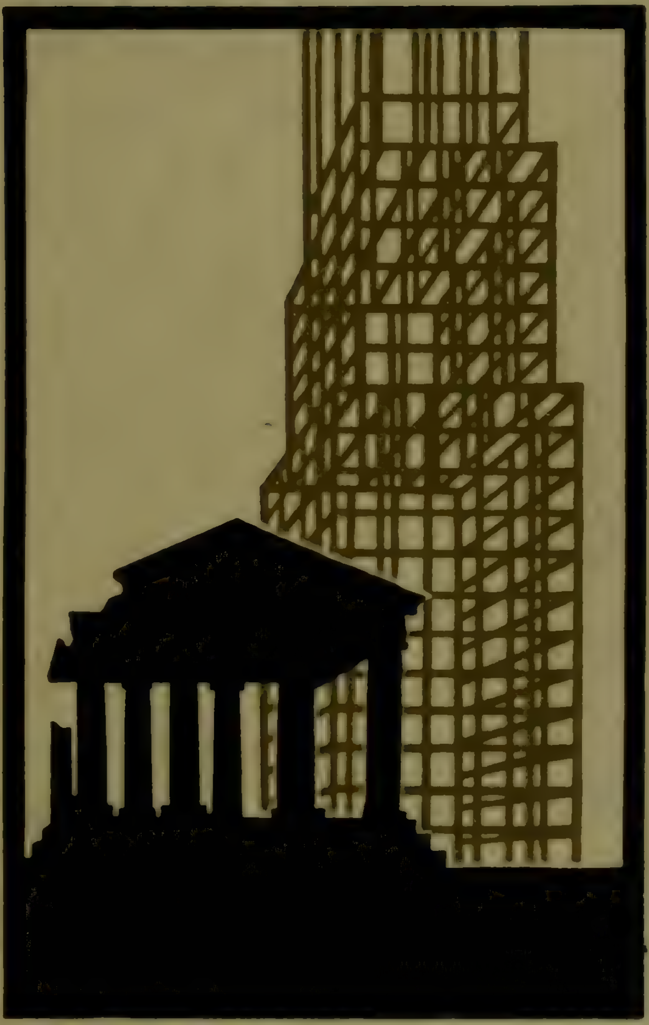

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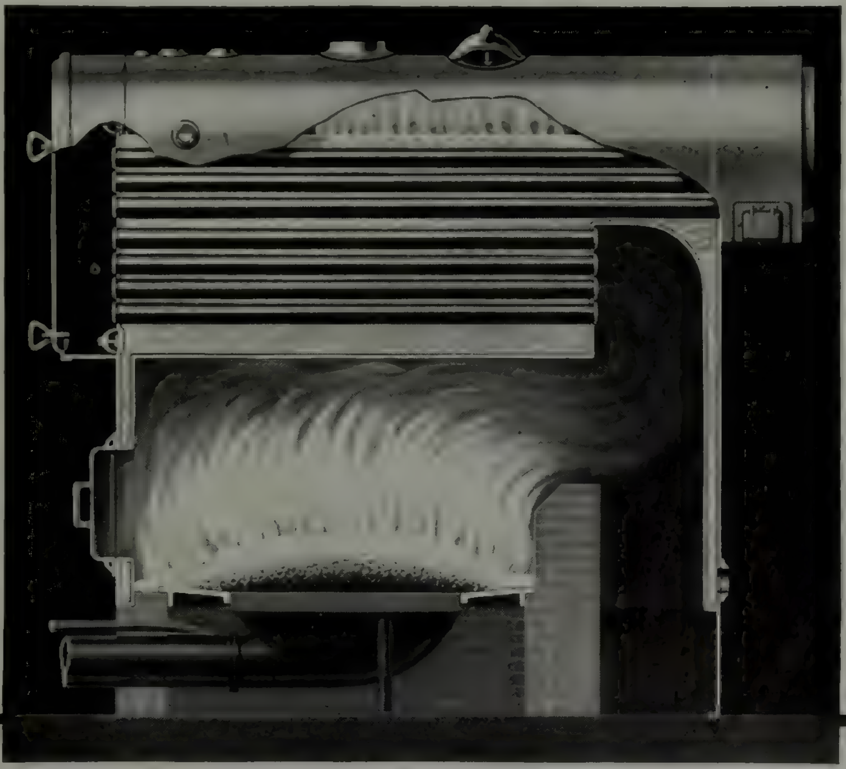

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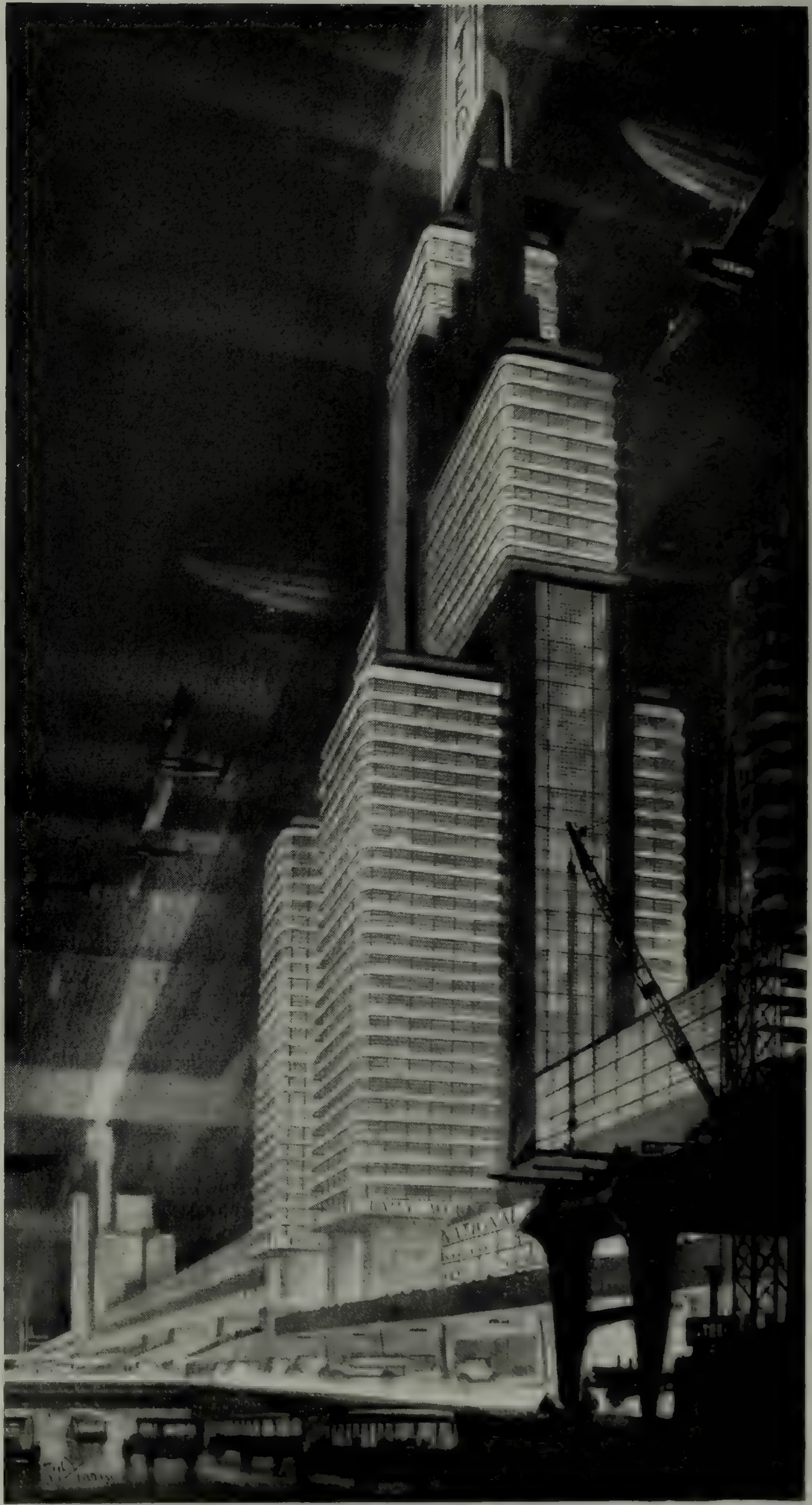
Before building anything, find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on steel construction, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City.—In Canada, to 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.

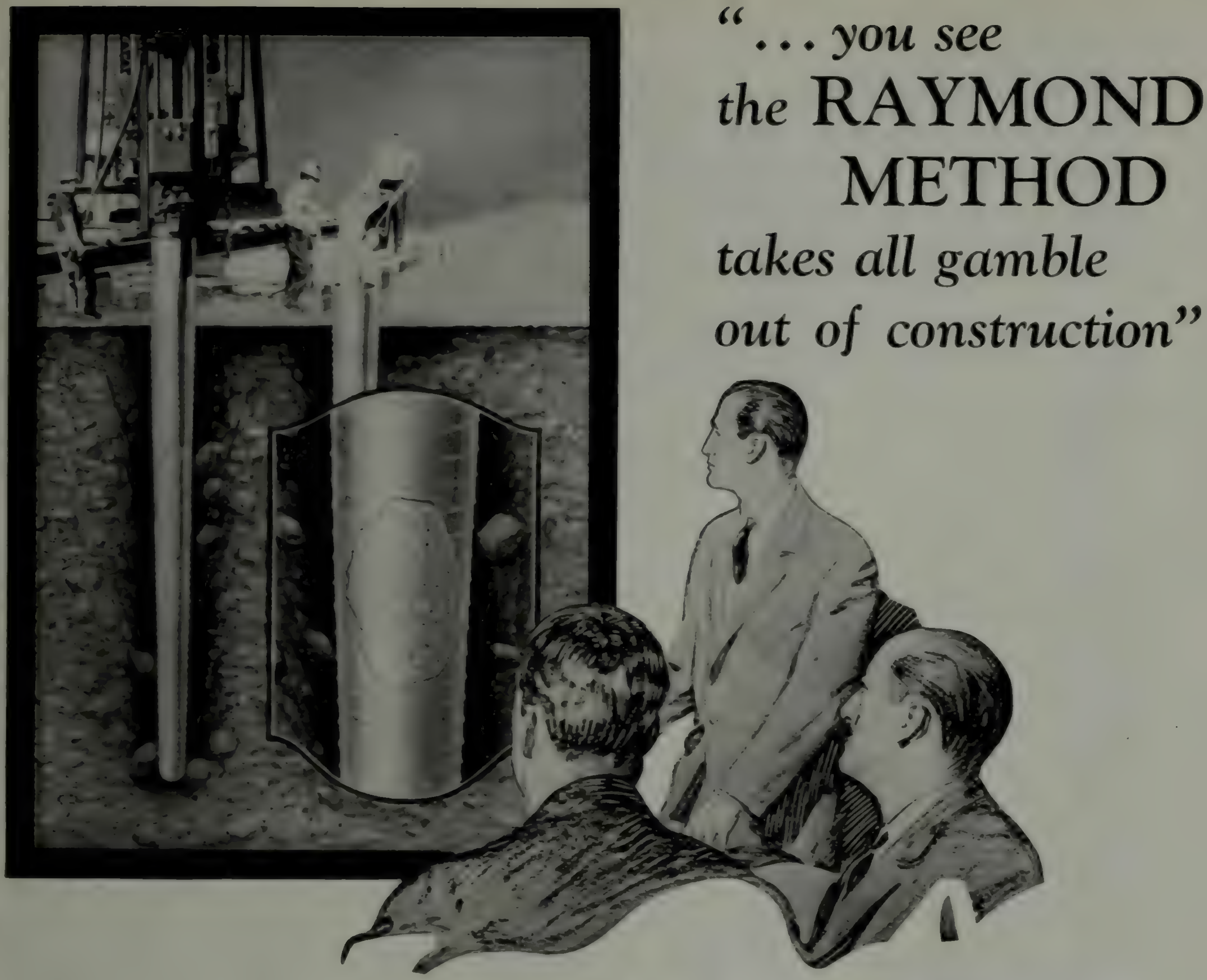


"STEEL CONSTRUCTION FOR WALLS OF GLASS." AN ENLARGEMENT OF THIS DESIGN BY HUGH FERRISS, ON SPECIAL STOCK FOR FRAMING, WILL BE MAILED WITHOUT CHARGE TO ANY ARCHITECT, ENGINEER OR BUSINESS EXECUTIVE.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY

"... you see the RAYMOND METHOD *takes all gamble out of construction"*



It is sound engineering practice to protect poured-in-place concrete by strong forms during the setting period. The Raymond Steel Shell is such a form, its duty being to confine the plastic concrete of the pile column to proper shape and dimension and (which is of vital importance) to maintain the driving resistance developed. The Raymond Method is the "determinate" method applied to Concrete Pile Construction.

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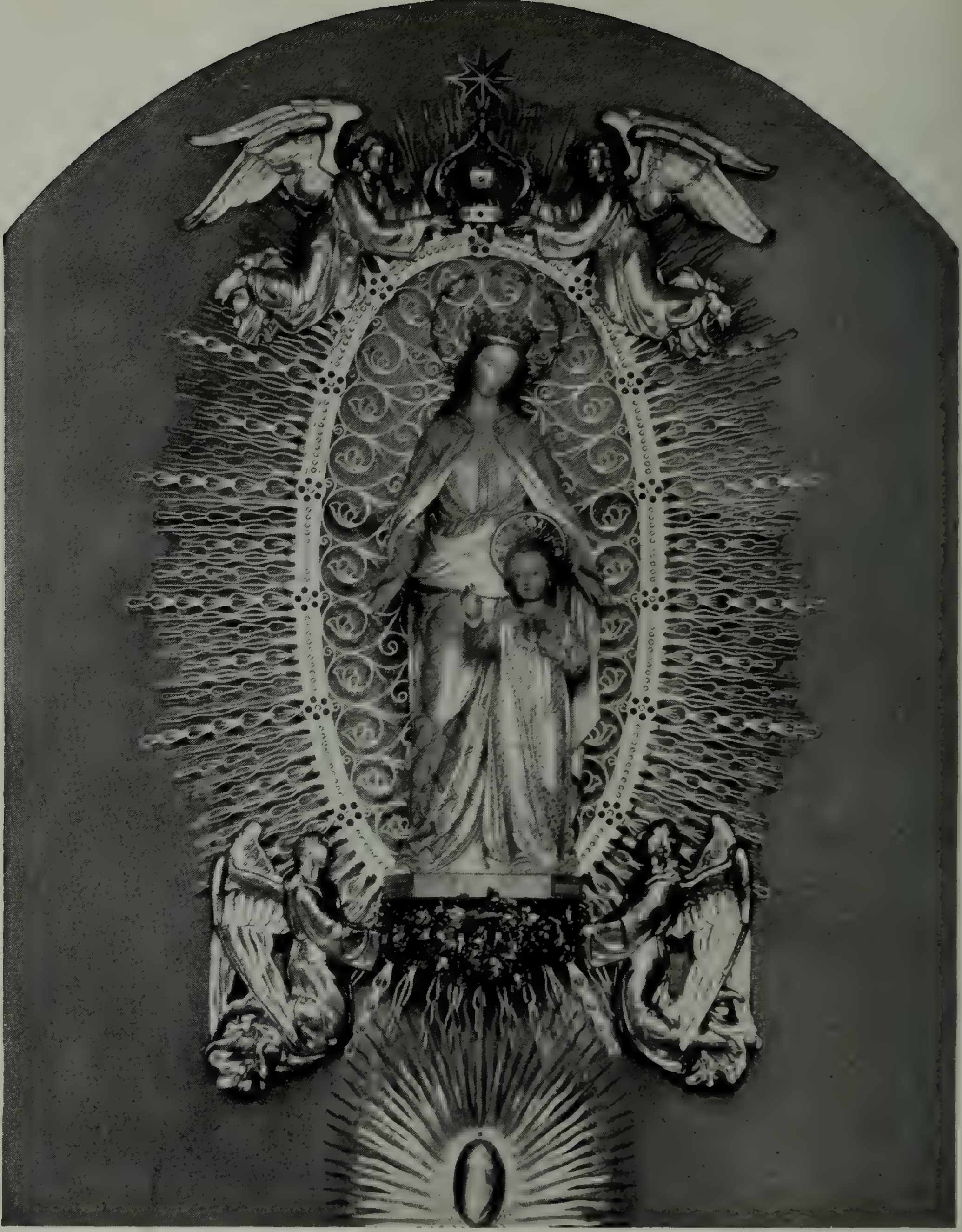
Bogota, Colombia, S. A.
Buenaventura, Col., S. A.
Omori, Tokyo-Fu, Japan



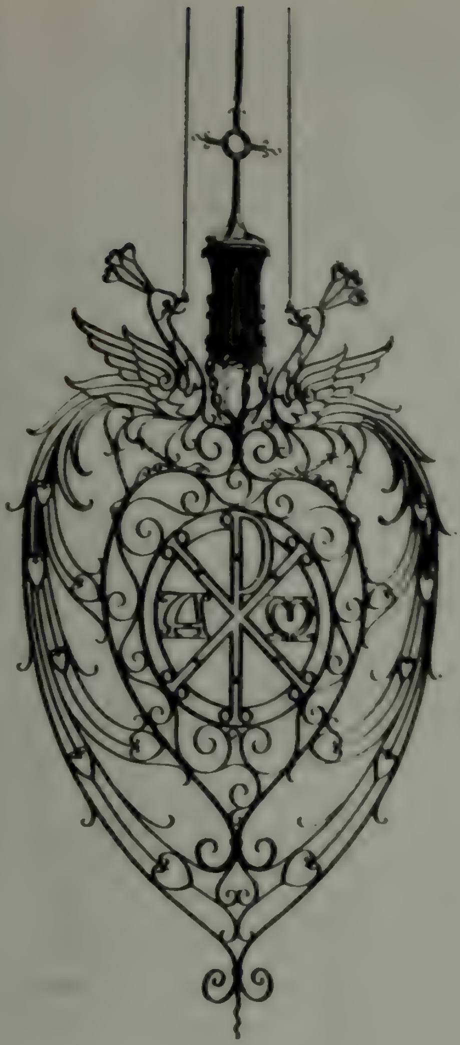
This entire design was executed in Anaconda Forging Bronze and sheet bronze with the exception of the two statues. Sheet bronze was used to form the four angels, which were all made by hand. Rectangular and square forging bronze was used for the fine ornamental "rays". Installed at Holy Hill, near Milwaukee.

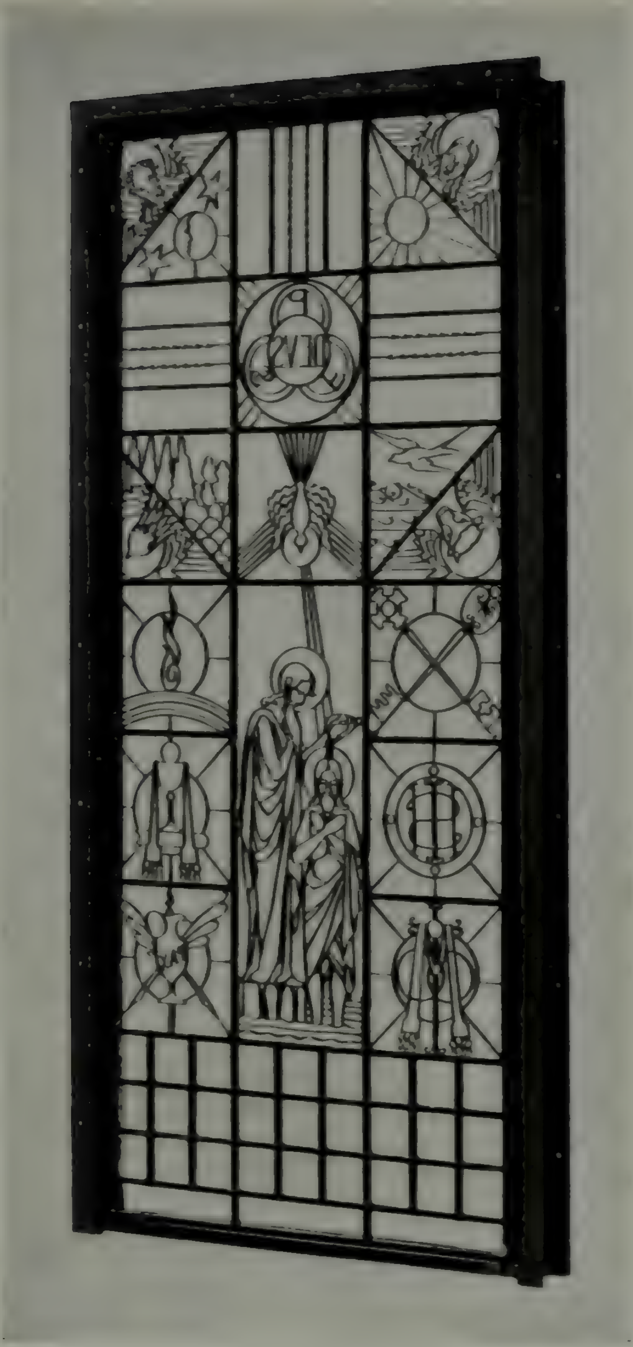
Aeschylus {525-456B.C.} wrote: "Bronze is the

THE GREATEST CRAFTSMEN from time immemorial have preserved their finest creations in enduring bronze . . . not only because bronze was durable, but also because the essential quality of workability lent itself to the fine work involved. So that the final result became in essence the very mirror of their thoughts.

Interesting examples of modern craftsmanship in bronze are shown in the illustrations. These are the work of Emil J. Lehmann of Milwaukee, executed in Anaconda Forging Bronze.

ANACONDA





mirror of the form"

The beauty and utility of Anaconda Forging Bronze make it possible to achieve unique results in fine ornamental metal work. The simplest or most intricate architectural design is enhanced by the rich appearance of this metal.

Anaconda Forging Bronze may meet the requirements of a design on which you are now working. A representative will be glad to give you more detailed information . . . The American Brass Company, General Offices: Waterbury, Connecticut.

THE LAMP and window, now installed in a church in Woonsocket, R. I., were fabricated of Anaconda Forging Bronze from rectangular and square shapes. The mullions are also of bronze. The illustrations hardly do justice to the rich beauty of these pieces.

ANACONDA
from mine to consumer

FORGING BRONZE

A natural finish breakfast alcove in the home of Mr. George Fearn, Jr., Spring Hill, Alabama. Mr. George B. Rogers of Mobile, architect

VERSATILE and CHARMING—

natural cypress is *the* wood for smart interiors

STAINED or varnished, painted or waxed, charred or left just as it comes from the yard. . . . Tidewater Red Cypress (Coast Type) is richly pleasing day after day, year after year.

To panels, beams, doors and trim, its exquisite grain lends a simple beauty rarely found in other materials—a smart distinction of unequaled charm.

And yet the cost of Tidewater Red Cypress is within reach of one of moderate means, as well as the wealthy client.

Versatile, charming and economical. . . . All of which perhaps explains why this Wood Eternal is favored for interiors by architects, interior decorators and home-owners in ever-increasing numbers.

A Book of Interiors—sent free

In this illustrated book of interesting interiors, designed by noted architects, you will see *how* and *why* Tidewater Red Cypress is being used in greater quantities today than ever before.

For your complimentary copy, write to the Southern Cypress Manufacturers' Association, Jacksonville, Fla. or New Orleans, La. Architects write for A. I. A. File No. 19.

If your dealer is not stocked with Tidewater Red Cypress, he can get it for you quickly—or you can write direct to any of the Association Mills.

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TIDEWATER
RED CYPRESS
(COAST TYPE)
THE WOOD ETERNAL

2 INCH BUTTS—HAND RIVED

Graduated Roof
on
Boathouse
at
Manhasset, L. I.,
New York
LaFarge Warren & Clark
Architects.

what architectural possibilities!

ELHIDE

HAND SPLIT
CEDAR SHINGLES

Today, more than ever before, architects are specifying Elhide Hand-split Cedar Shingles for both sidewalls and roofs, not only to secure the remarkable durability of split Red Cedar, but because the rugged natural-split grain of the shingles gives a delightfully mellow and seasoned effect, quite impossible to attain with any machine-made material.

Elhide Shingles, when laid in courses of graduated exposure and thickness, beginning with massive two inch butts at the eaves, produce a roof which is individual, substantial and of compelling interest.

Elhide Hand-split Shingles are made in seven thicknesses from one-half to two inches, and are of sufficient length to allow any appropriate exposure. They are furnished in natural weathering wood, or stained to any desired color.

Upon request, sample shingles and more complete information will be gladly furnished.

THE ELHIDE COMPANY
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LIST the qualities you demand from an ideal office partition, and the six above will emerge. Add them up. The total is Sanymetal "Officiency."

The advantages of privacy have long since been conceded—of quiet, individual office compartments. The result is always vastly increased efficiency, with a happier working force. Sanymetal Steel Office Partitions realize a new simple, rich beauty based upon continuous sweep of line. A new utility comes from great speed of assembly and reassembly, gained through a complete standardization and interchangeability of units. The new Sanylene finishes laugh off the hurts sustained by the usual knocking about. Long life, flexibility, ease of handling, and thorough, farsighted design shoot together into a gratifying economy which is the ultimate end of all Sanymetal engineering.

Sanymetal steel office and factory partitions are made in four types for every purse and purpose. Sanymetal also builds steel toilets, shower and dressing compartments, and hospital cubicles. Communicate with Partition Headquarters.

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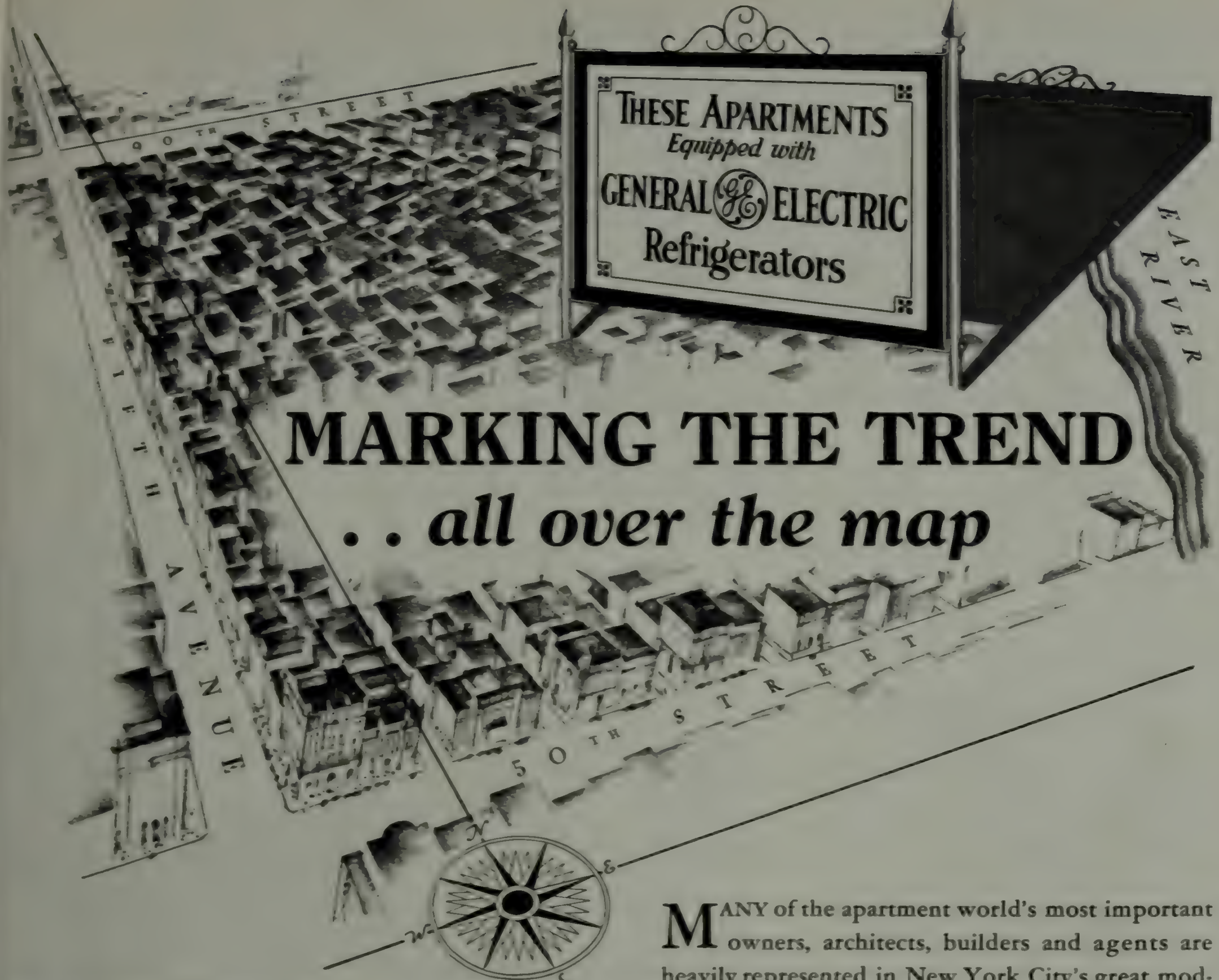
Steel Toilet & OFFICE PARTITIONS



MARKING THE TREND
. . all over the map

MANY of the apartment world's most important owners, architects, builders and agents are heavily represented in New York City's great modern apartment area—from Fifth Avenue to the East River and from 90th Street to 50th Street. Broadly experienced, and commanding every resource of investigation, an *overwhelming majority* of these noted operators are definitely on record with large investments in General Electric Refrigerators—not only for expensive de luxe apartments, but also for the most moderately-priced quarters.

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At Last! Backgrounds of Enduring Beauty for your Finest Interiors . . .

Neither sun nor time can dim or mar the most delicate patterns of this amazing new wall covering. Stains of ink, grease and dirt vanish like magic when washed with soap and water—even if allowed to remain for weeks.

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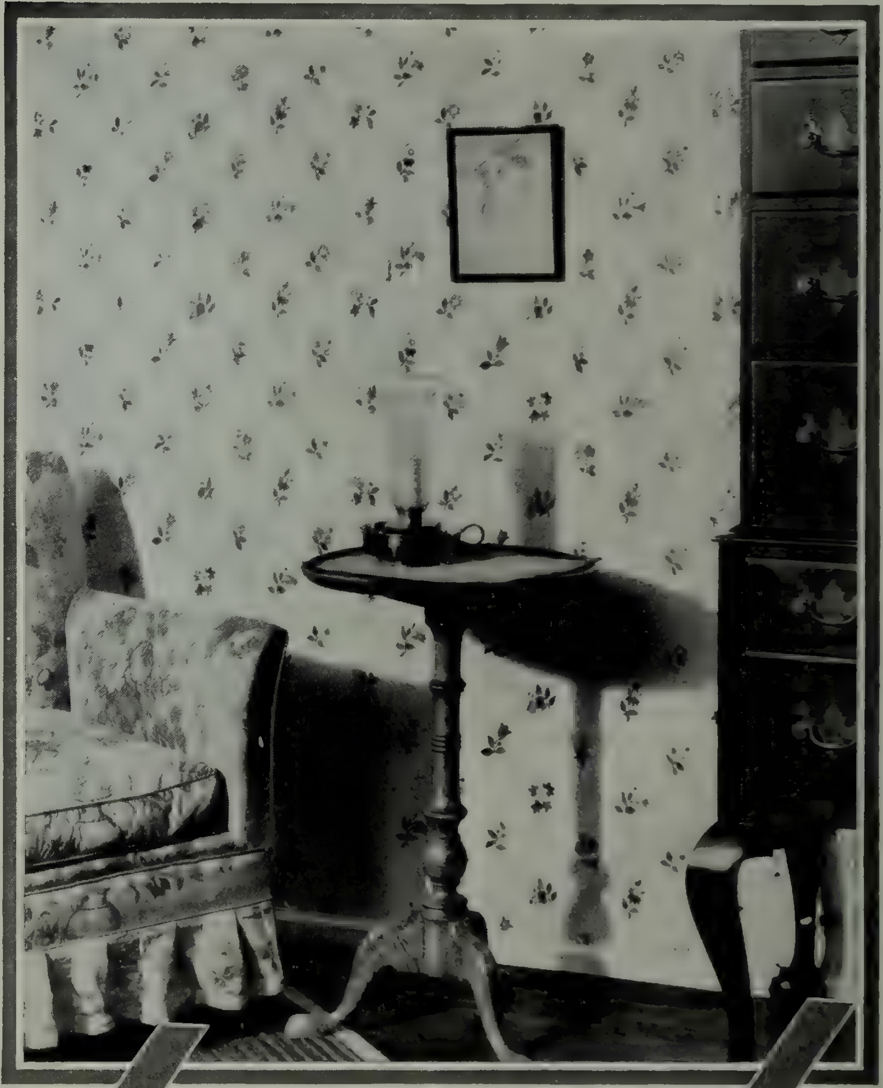
Your walls have years when covered with—



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Of course you'll want to know more about EN-DURAL Washable Wall Papers. You'll want to see the entire collection of striking EN-DURAL Patterns created to meet every decorative need. Samples for your own testing and complete information sent upon request. Address Dept. A.

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AFTER FIVE YEARS OF

All cash purchases on mezzanine floor are speedily handled by the Sedgwick Correspondence Lift leading to Cashier's Desk on main floor.

Mezzanine floor view of Sedgwick Lift which saves considerable time in dispatching books between main floor and mezzanine for waiting customers.

HARD DAILY SERVICE *these* SEDGWICK *CORRESPONDENCE AND SMALL PACKAGE* LIFTS

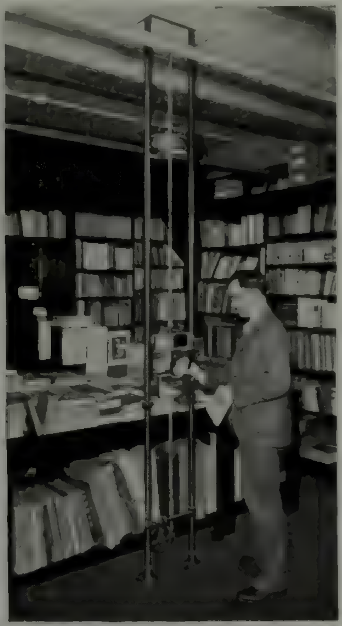
are still serving Brentano's without ONE CENT *of upkeep cost*

BRENTANO'S, internationally known book establishment, uses these Sedgwick Correspondence Lifts constantly during the day to speed sales and better satisfy customers . . . Sedgwick Correspondence Lifts are particularly suited to many types of retail and wholesale establishments, banks and small office buildings. The installation cost is moderate, and the cost of upkeep is practically nothing . . . Investigate this time-saving equipment.

New Complete Catalog— Contains much helpful data, such as blue prints, specifications, and a special chart of suggested uses of Sedgwick equipment for various types of structures. Copy gladly sent on request.

SEDGWICK
Dumb Waiters - Elevators
FOR ALL PURPOSES

Cashier's Desk on main floor showing Sedgwick Lift leading to mezzanine. Customers are more quickly served. Sales people do not have to climb stairs.



Main floor view of Sedgwick Lift used for handling books between main floor and the mezzanine. Various styles of carrier available to meet specific needs.

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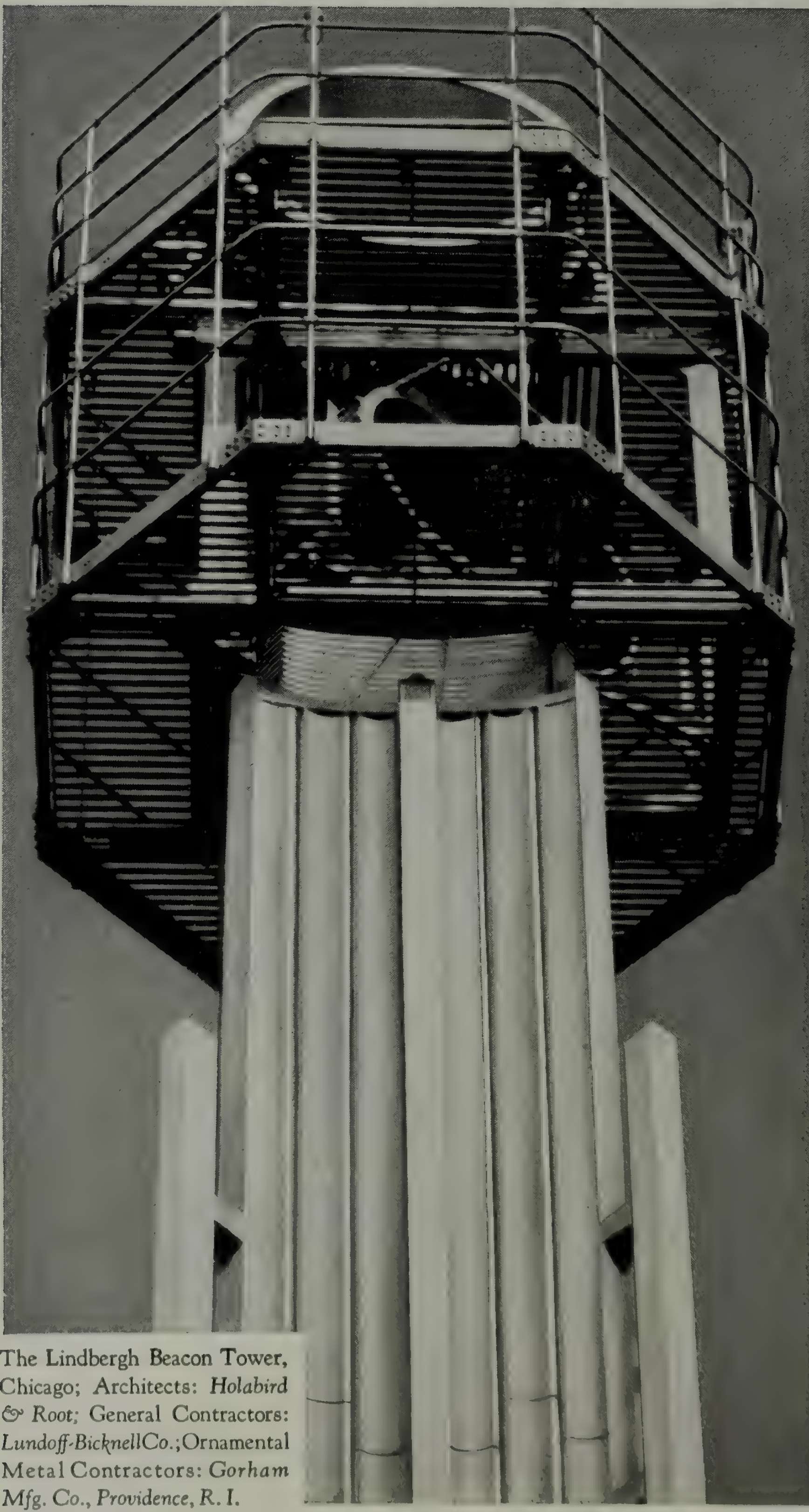
A friendly gleam to guide aright, the wingèd travelers of the night



The Lindbergh Beacon Tower, Chicago; Architects: *Holabird & Root;* General Contractors: *Lundoff-Bicknell Co.;* Ornamental Metal Contractors: *Gorham Mfg. Co., Providence, R. I.*

The Lindbergh Beacon is protected with Alcoa Aluminum

With a roar and a rush, the "Midnight Mail" takes off for the Chicago airport. The pilot, engulfed in blackest night, strains for the first sight of a guiding gleam. There it is—just over the cowling—the rays of the Lindbergh Beacon, a two billion candle-power light effective for 300 miles North, East, South and West.

Night flyers heading to Chicago from Cleveland, Cincinnati, St. Louis and many other cities follow the Lindbergh Beacon's silvery path of light nearly the entire distance. The beacon, the largest and the most powerful aerial light ever constructed, is the gift of the late Elmer A. Sperry. In its construction, Alcoa Aluminum alloys are used extensively.

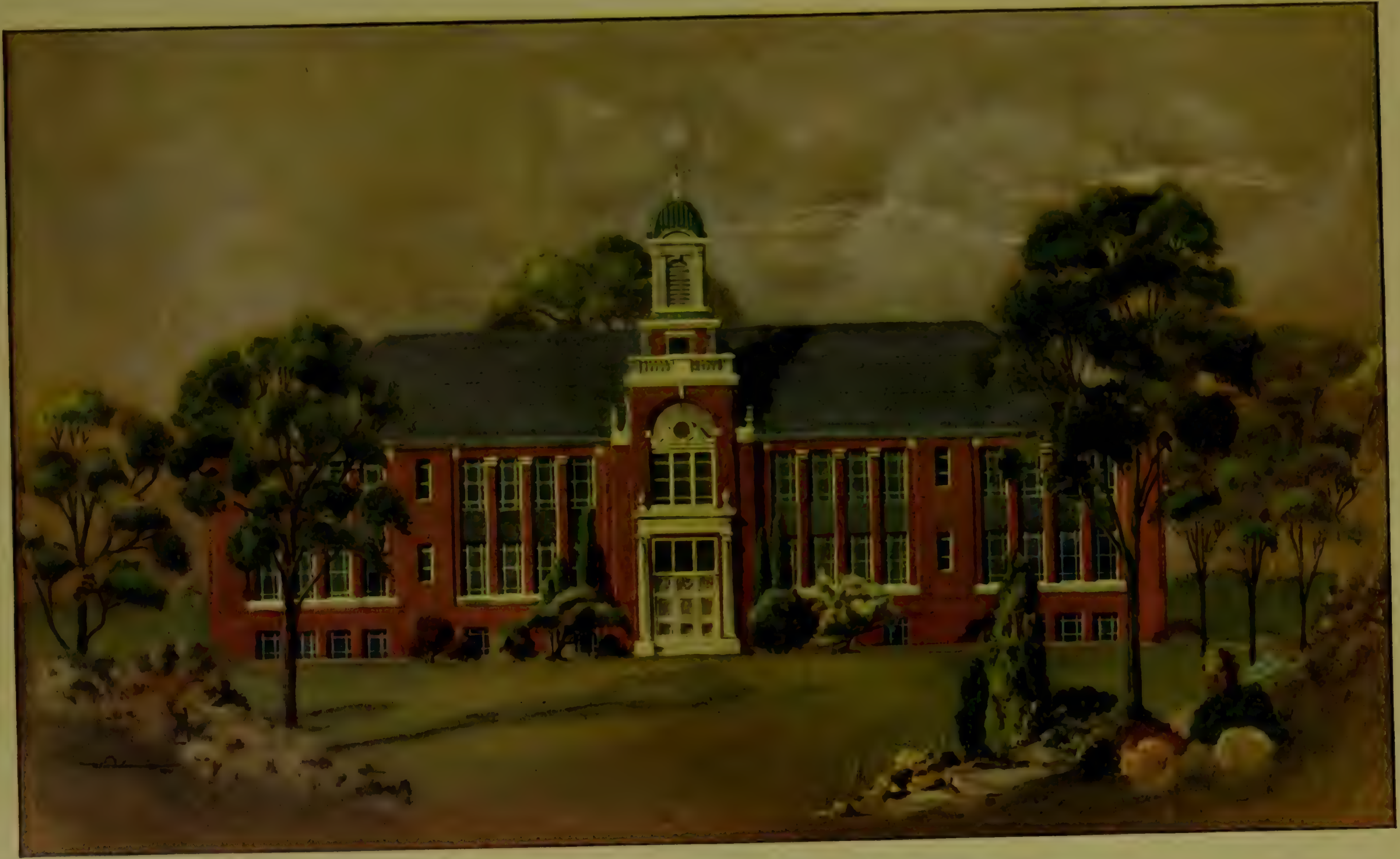
The projector housing is cast Alcoa Aluminum. The platform work is fabricated of wrought aluminum. The steel work in the tower is encased in Alcoa Aluminum Extruded Shapes. Altogether, more than five tons of Alcoa Aluminum are used.

Light, strong, resisting corrosion, and not even requiring paint, Alcoa Aluminum alloys provide a medium with a beautifully toned and textured surface in which artistic and architectural effects can be executed.

SPECIFICATIONS

Alcoa No. 43 Aluminum alloy is recommended for most architectural uses. To meet the numerous demands for structural stability, Alcoa Aluminum alloys are available in various tensile strengths. In each of our offices we have competent representatives with a wealth of experience as to the decorative and structural uses of the special Alcoa Aluminum alloys. The services of these representatives are available to the designer and the specification writer. May we urge you to accept this cooperation without obligation in designing and writing specifications for buildings in which Alcoa Aluminum alloys will form a part? ALUMINUM COMPANY *of* AMERICA; 2467 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA ALUMINUM



STAATSBURG SCHOOL, DISTRICT No. 2, TOWN OF HYDE PARK, STAATSBURG, N. Y.
C. H. Gardinier, Albany, N. Y., *Architect.*

The use of Soapstone quoins and trim on Independence Hall, Philadelphia, establishes the precedent for this material in Colonial architecture. In this modern adaptation of Colonial design the natural beauty of the Alberene Stone (soapstone) Spandrels contrasts beautifully with the red brick. Thin Alberene Stone Spandrels save space by providing recessed pockets for radiators; accent vertical lines;—no maintenance cost, no painting, no sand blasting—durable beyond question. (See details and other information overleaf.)

Details of Alberene Stone Spandrels

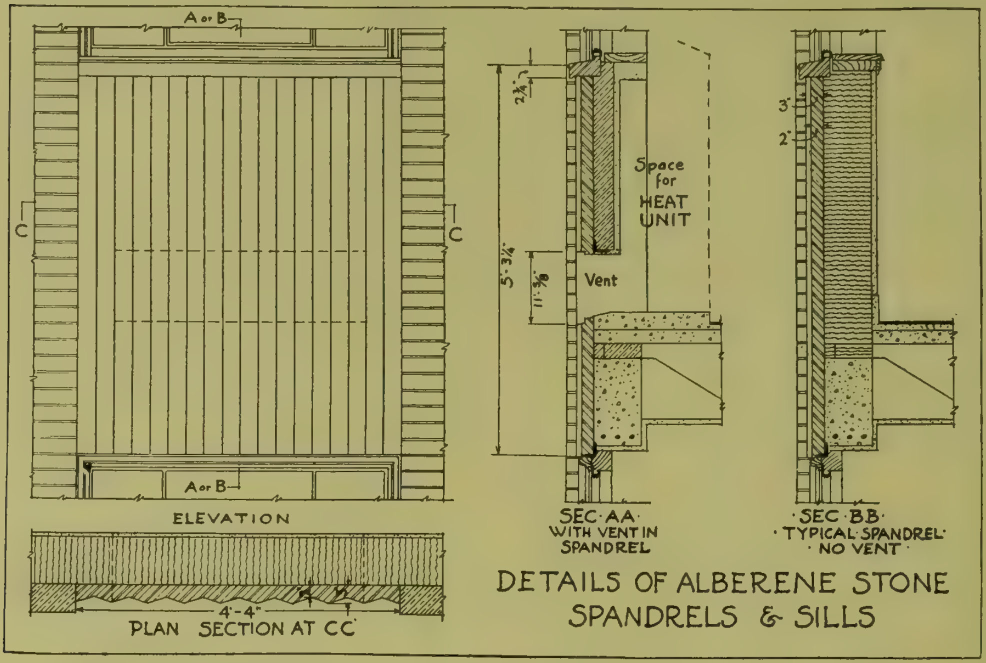

A or B
C
C
Space for HEAT UNIT
Vent
2¾"
5'-3¾"
11⅞"
3"
2"
A or B
ELEVATION
4'-4"
PLAN SECTION AT CC
SEC·AA· WITH VENT IN SPANDREL
·SEC·BB· ·TYPICAL·SPANDREL· ·NO VENT·
DETAILS OF ALBERENE STONE SPANDRELS & SILLS

Figure 1—Alberene Stone Spandrels as installed between 1st and 2nd story windows, Staatsburg School. (*See illustration on preceding page.*)

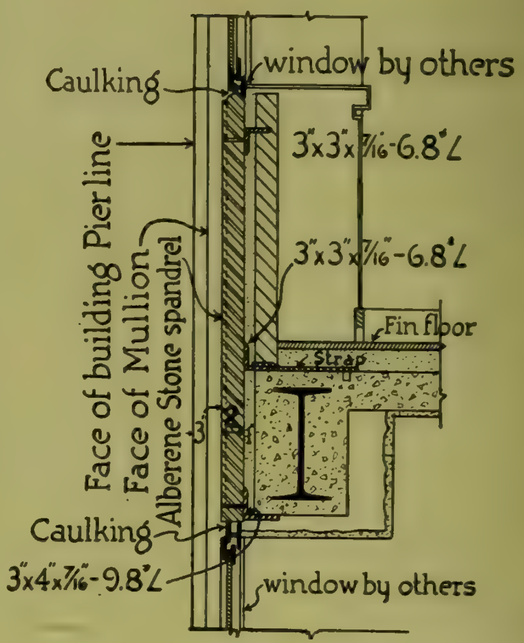


Figure 2 — An office building installation showing 2'' thick Alberene Spandrel with 2'' brick backing, thus allowing radiator to be recessed in wall under window.

Information for the Specification Writer on
Alberene Stone Spandrels

FIGURE 1 shows single window Alberene Stone Spandrel. Section AA shows vent through spandrel and recess in wall for the installation of self-contained heating and ventilating unit. BB is typical section showing Alberene Spandrel used as veneer over hollow tile wall.

EXTRA FLOOR SPACE

Figure 2 shows wall section of a double spandrel job. Alberene mullion is also shown. The construction here makes it possible to place the radiator back of the wall line leaving the floor area clear, and reduces materially the weight of the wall.

SPECIFICATIONS

Material (*Double Spandrels*). All spandrels to be structurally sound soapstone, grade equal to Alberene Stone. Stone not to be less than 1½'' thick at thinnest point. Each pair of spandrels to be securely bolted to three horizontal angles extending 2'' beyond spandrel at each end.

Bottom angle to be 3''x4''x$\frac{7}{16}$'', center and top angles to be 3''x3''x$\frac{7}{16}$''. Mullion to be 3¾''x3¾'' soapstone, rebated and bolted to steel flat 3½''x½''.

Construction (*Double Spandrels.*) Spandrels to be embedded in masonry 2'' on each side, angles extending 2'' farther into masonry to provide additional anchorage. Center angle to be bolted to unfinished floor by straps on 16'' centers.

(*Single Spandrels*). (a) Spandrels to be embedded in masonry 2'' on each side, or (b) where spandrel is not embedded in masonry at sides it shall rest on 3½''x2''x⅜'' angle and be secured to the wall by anchor straps, or to piers at sides with dowels.

Special Cases. Where window is set with deeper reveal than face of spandrel, provide counter sill. Counter sill to be rebated for metal window frame and securely bolted to spandrel. Also provide soffit return for lintel at window head. Soffit to be bolted to under side of the 3''x4''x$\frac{7}{16}$'' angle.

Note. *Angles are not needed with single spandrel unless of excessive dimensions requiring multiple units. Where space is not larger than 5'0''x4'0'', we recommend the use of single slab rather than built-up spandrels.*

ALBERENE STONE COMPANY, 153 W. 23rd St., New York
BRANCHES: Chicago :: Philadelphia :: Boston :: Newark :: Pittsburgh
Cleveland :: Richmond :: Washington, D. C. :: Rochester
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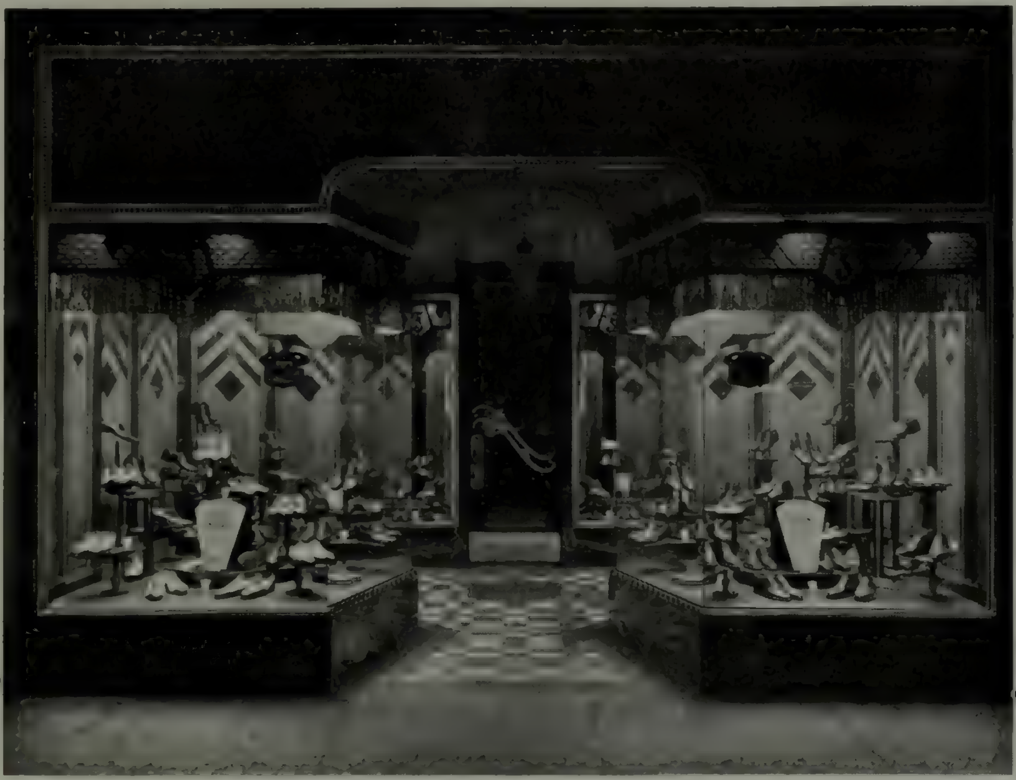
The new City Hall at Buffalo, N. Y., Dietel and Wade and Sullivan W. Jones, *Architects*, Geo. F. Fisk, *Commissioner — Public Works*. Alberene Stone Spandrels used.

▾ ▾ ▾

Our Architects' Service Department will welcome the opportunity of submitting samples of Alberene Stone and of supplying any information desired regarding its fabrication, ornamentation, and physical properties. The brochure "Architectural Alberene" is available, also.

ALBERENE STONE SPANDRELS

THIN SLABS OF NATURAL STONE – BEAUTIFUL – ENDURING



The up-to-date, attractive front of a Florsheim Shoe Store in Chicago, framed in Brasco construction. Brasco is identified with the country's most prominent shops—individual, chain and department stores.

MONEL METAL

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Over twenty years of continuous advancement in the art of store fronts have brought to Brasco constructions all the charm and distinction of the modern metals, so necessary for today's designs.

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Coupled with every Brasco product is the certainty of quality—the strength of heavy gauged materials—permanence—safety to the plate—all at moderate price. Interesting data with full-sized details and actual samples clearly marked with the gauge of each member, gladly sent on request.

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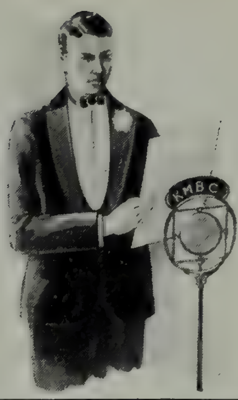
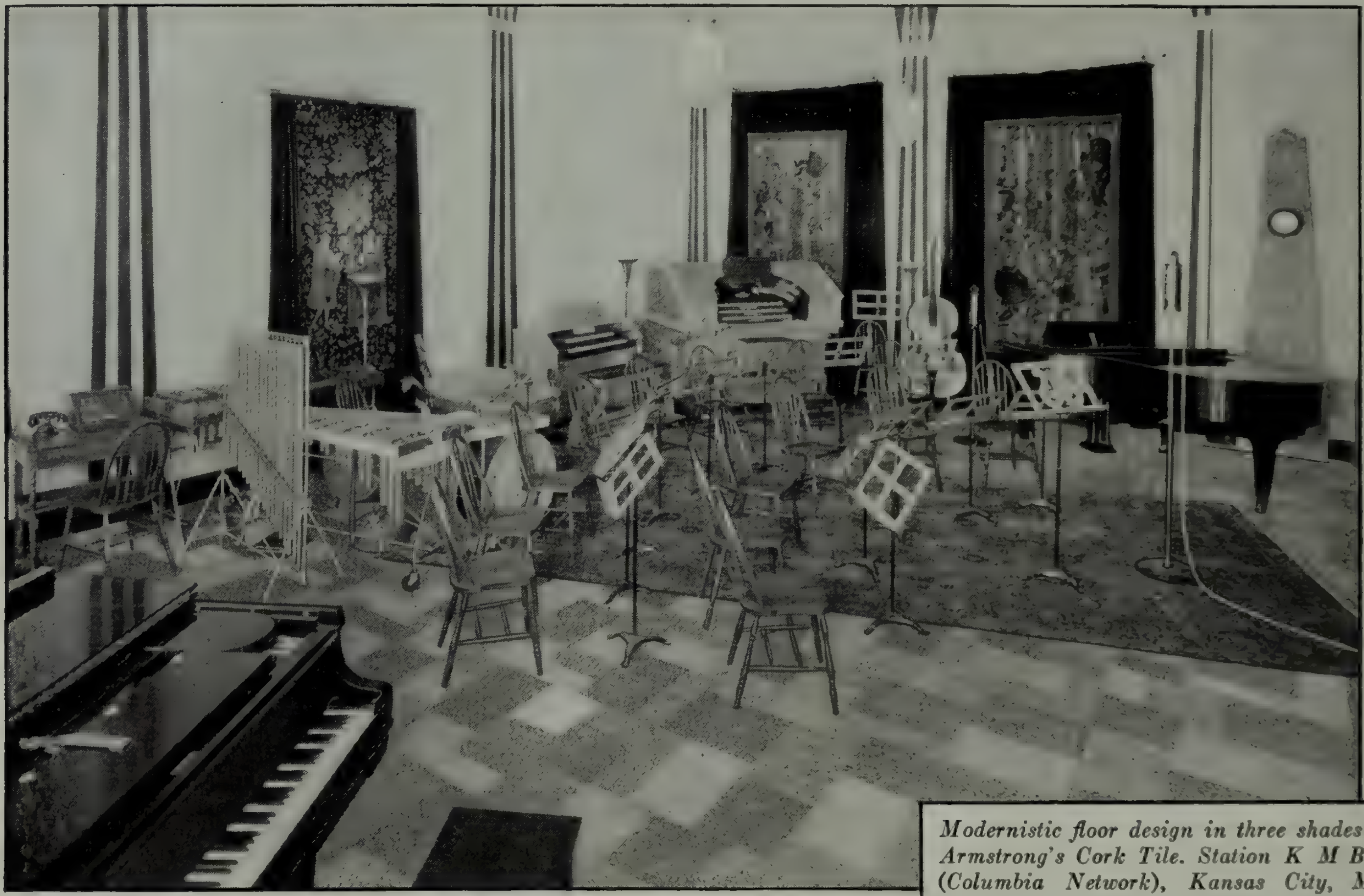
Brasco
STORE FRONTS

When KMBC goes on the air..





Modernistic floor design in three shades of Armstrong's Cork Tile. Station K M B C (Columbia Network), Kansas City, Mo.

this floor of Armstrong's Cork Tile helps to quiet unwanted studio noises . . . . .

THE announcer holds up his hand. "We're on the air!" From then until the program is finished no undesirable sounds must reach the delicate "mike." Chairs will be moved, of course, but the Armstrong's Cork Tile Floor will make them noiseless. Musicians and attendants must walk about, but there will be no sound or echo from this floor of resilient cork.

In broadcasting studios where sound *must* be subdued—Armstrong's Cork Tile is the happy choice. Libraries, churches, schools, and auditoriums too, have found that this modern floor assures foot-friendly comfort as well as desirable sound quieting.

Armstrong's Cork Tile is made from pure natural cork compressed and baked. Natural cork gums make a perfect binder—nothing more needs to be added.

Try Armstrong's Cork Tile on any floor area where comfort, silence, and rich beauty are primary considerations. Our book "Custom-Built Floors of Cork" will tell you all about Cork Tile and Armstrong's other custom-built floor, Linotile. It's free of charge. Just write to the Armstrong Cork Company, Custom Floors Department Lancaster, Pennsylvania.

Armstrong's
(A)
Product

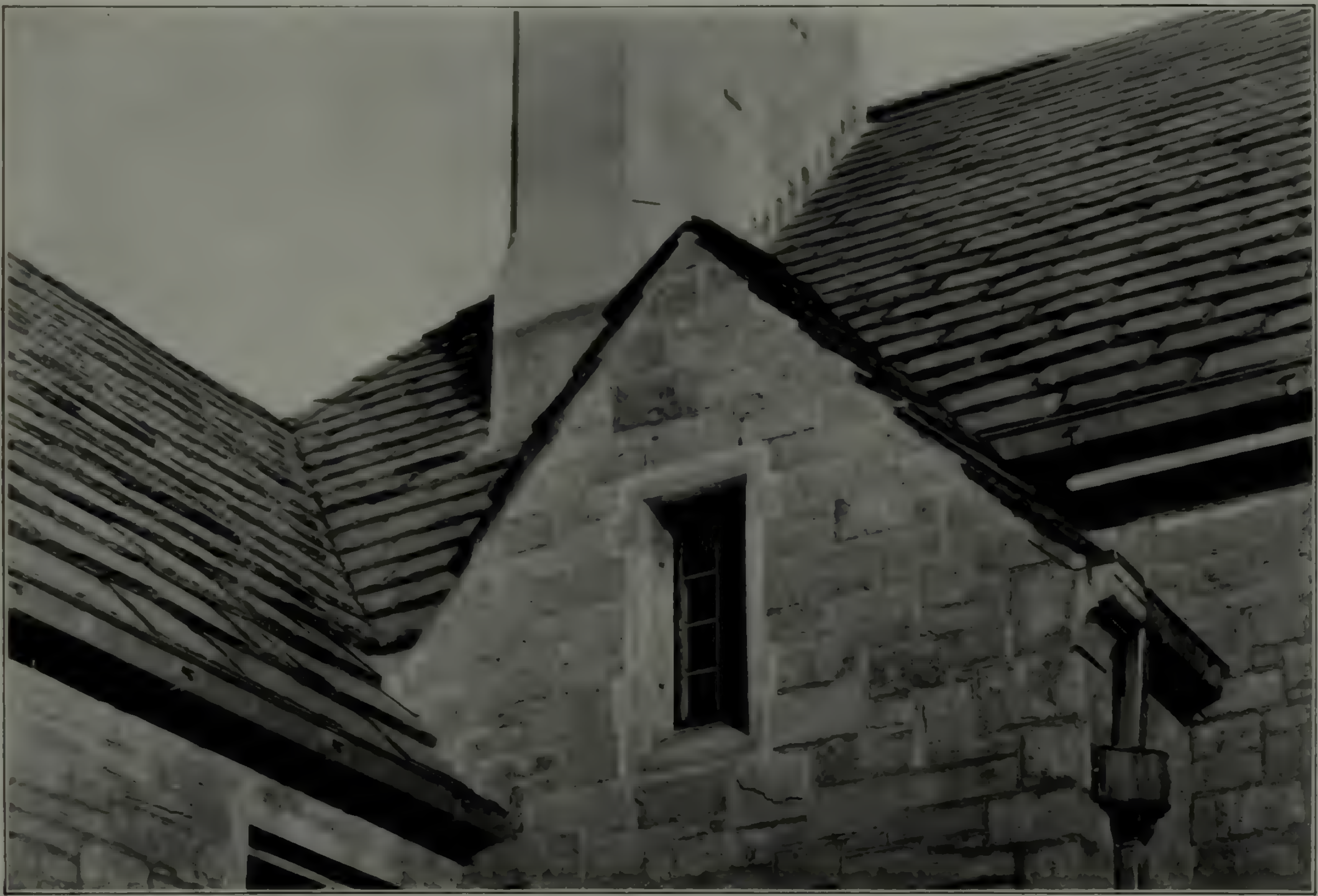
Armstrong's Custom Floors

LINOTILE CORK TILE

MADE BY THE MAKERS OF ARMSTRONG'S LINOLEUM

"I never use Opera Glasses or sit in the Front Rows"

Thus spoke a woman for whom the drama lost all its value when, through proximity or magnification, its artificiality was made evident.



How different with a Sheldon Slate Roof!

Neither proximity nor magnification can reveal artificiality—because there is none.

Neither distance nor angle nor kind of light nor time of day diminishes its beauty.

Which explains this close-up of a corner of the magnificent residence illustrated last month.

And remember that age only enhances its loveliness; it can not impair its superlative protective qualities—which outlast the building.

Residence of George F. Rand
Architects: Edward B. Green and Sons and Albert Hart Hopkins } All at Buffalo, New York
Roofers: Machwirth Brothers

F. C. SHELDON SLATE CO.

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PROTECTION by A. D. T.

In the old City Hall at Atlanta, Ga.,—and now in the new $2,000,000 building, positive protection was carefully planned. In both cases, A. D. T. Central Station Watchman Supervisory Service was chosen to guard the premises.

Properties of all types, valued at more than 22 billion dollars, are constantly protected by A. D. T., the highest standard of property protection available.

A. D. T. Central Station Services, operating through A. D. T. Central offices in principal cities, include Watchman Supervisory, Manual and Automatic Fire Alarm and Sprinkler Supervisory Systems.

For details, see our catalog in Sweets or write us.

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Atlanta, Ga.**

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Controlled Companies of
American District Telegraph Company
155 Sixth Avenue, New York, N. Y.

© [illegible]

FERROCRAFT

The first and last word in GRILLES

A corner of the Girls' Club Room—new Aetna Life Insurance Building, Hartford, Conn.

"Ferrocraft" was specified by James Gamble Rogers for this attractive installation—one of many spots beautified by Tuttle & Bailey in the most important rooms of the $8,000,000 building of the Aetna Life Insurance Co. in Hartford, Conn. Furnished to rigid specifications, Ferrocraft Cast Grilles are increasingly the choice of modern architects for modern economy in modern buildings.

TUTTLE
AND
BAILEY
MANUFACTURING
COMPANY
ESTABLISHED 1846

TUTTLE & BAILEY MFG. CO., INC., 441 Lexington Ave., N. Y.
Offices in Boston, Chicago, Kansas City, Los Angeles.

Value—
on the Surface—and Beneath

The value of Stedman Reinforced Rubber Flooring cannot be measured by its good surface appearance alone. Owing to its reinforced construction in which minute cotton fibres uniting with rubber under high pressure and heat become an integral part of the material, lasting value is built-in and goes straight through the tile.

Therefore, Stedman Tiles have a remarkable resistance to wear.

Floors of this modern material laid 10 years ago, are still fresh looking, still resilient, still taking all the punishment that hard use can give them. We make only this single product and in one quality only,— the best that it is possible for us to produce. Send for catalogue with color plates.

STEDMAN RUBBER FLOORING COMPANY, South Braintree, Mass.

Stedman Reinforced* Rubber Tile

*** REINFORCED: In the Stedman Process minute cotton filaments, uniting with the rubber under high pressure and heat, are responsible for its unusual resistance to wear and distention, its lasting resilience and smooth impervious surface—characterized by color veinings of remarkable fineness and beauty.**

Directors' Room, new offices of Spencer, Trask & Company, New York City. The design is a combination of Black Gold and Gold Black Squares. Spencer, Trask & Company write: "We wish to say we are very much pleased with the floor and highly recommend it."

© FOWLER

You may not know

THERE'S A DIFFERENCE

but

TIME WILL TELL

Lead is familiar to the chemist. He knows of its resistance to many acids and fumes; some of them, commonly found in our atmosphere, are the cause of many roof failures.

The farmer knows Lead. He has plowed up old lead bullets untouched by their years buried in the earth. He realizes the rust resistance of lead.

The plumber's experience tells him of the everlasting qualities of lead. He has dug up old lead pipe, buried in the ground for years without harm. He knows the difference.

Leadclad Stocks in These Cities

Boston, Mass., Herrick & Co., 47 and 49 Broad St.
New York, N. Y., Katzman & Strober, 1182 Flushing Avenue, Brooklyn, N. Y.
Bridgeport, Conn., Parsons Bros., 25 E. Washington Ave.
Cleveland, Ohio, J. Kinsner & Son Co., 8710 Blaine Ave.
Detroit, Mich., W. J. Burton Co., 5670 Federal Avenue
Cincinnati, Ohio, Maximent Company, 615 Carr Street
Richmond, Va., Victoria Metal Company
Mansfield, Ohio, E. C. Leisy Roofing Co., 115 Stocking Ave.
Erie, Pa., Gust Krack & Son Co., 1018 W. 18th St.
Youngstown, Ohio, Dalzell Bros. Co., 928–940 W. Rayen Ave.
Toledo, Ohio, Fred Christen & Son, 714–726 George St.
Baltimore, Md., Kahl-Holt Co., 111 South Charles St.
Washington, D. C., Fries, Beall & Sharp, 734–736 Tenth St., N. W.
Norristown, Pa., Asbestos Insulating Co., Cor. Astor & Main Sts.
San Francisco, Cal., Carter Specialties Co., 506 Sharon Bldg.
Los Angeles, Cal., H. E. McGowan Co., 2464 Enterprise Street
Indianapolis, Ind., Tanner & Company.

The similarity of these roofs is obvious, the difference almost impossible to detect. Yet a difference is there; a difference in service, a difference in upkeep and repair cost. One will survive the other by years, with less attention, lower expense. The difference is there but time only can disclose it.

That Difference is Important to the Architect

The roof with the longer life, with years of freedom from upkeep is Leadclad. Leadclad is sheet steel (for strength) sheathed in a heavy jacket of PURE LEAD, the same imperishable lead that has long roofed many of the famous structures of the old world. Everyone knows that LEAD won't rust but it is in Leadclad only that this proven protection is adapted to the needs of modern building.

For nearly a quarter of a century Leadclad roofs have been protecting many of the important buildings of the country. On the sea coast, in the great industrial centers, where salt air and smoke make short work of many types of roof, Leadclad has proved its immunity, outlasting by years the roofs put on adjoining buildings at the same time.

Leadclad's protection of PURE LEAD will mean substantial savings to you in roofing bills. Get all the facts about Leadclad.

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WHEELING METAL & MANUFACTURING CO.
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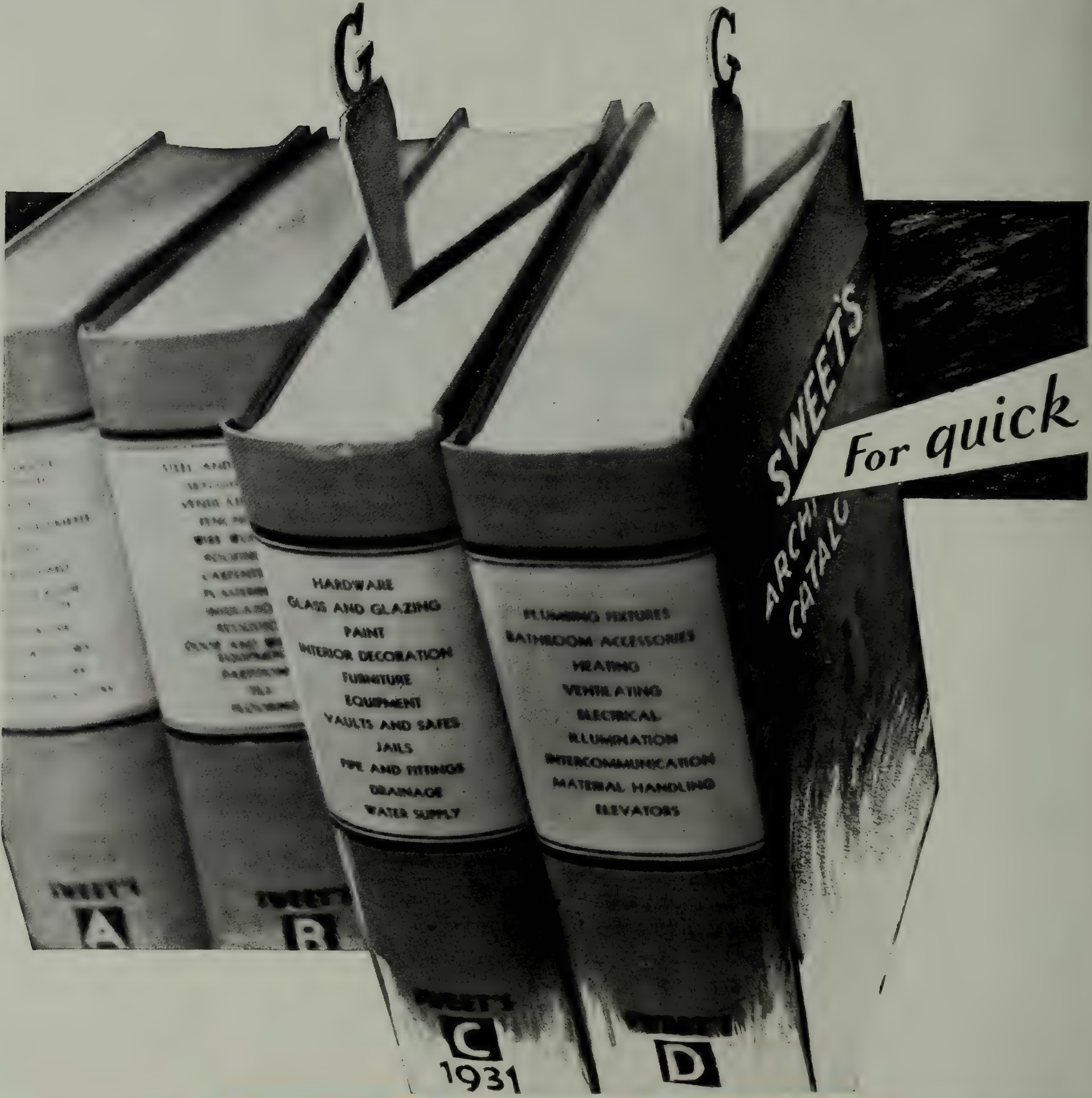

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Pipe fittings, cast and malleable, perfectly threaded, accurately machined and rigidly inspected. Pipe hangers adjustable after the pipe is up. Reduce installation costs and maintenance expense.

This trap, with the famous Hydron Bellows, will operate a radiator for a lifetime without repairs.

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The famous Quartz bulb sprinkler head. In most cases sprinklers will reduce insurance expense from 50 to 90 percent.

Where air dryness, adversely affects processes, large savings are made by our humidification equipment.

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Explicit and authoritative data—just what practical engineers and architects want.

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1 page on the Equiflo Valve to balance hot water circulation.
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6 pages on Grinnell malleable and cast iron fittings, and Triple XXX products for super power.
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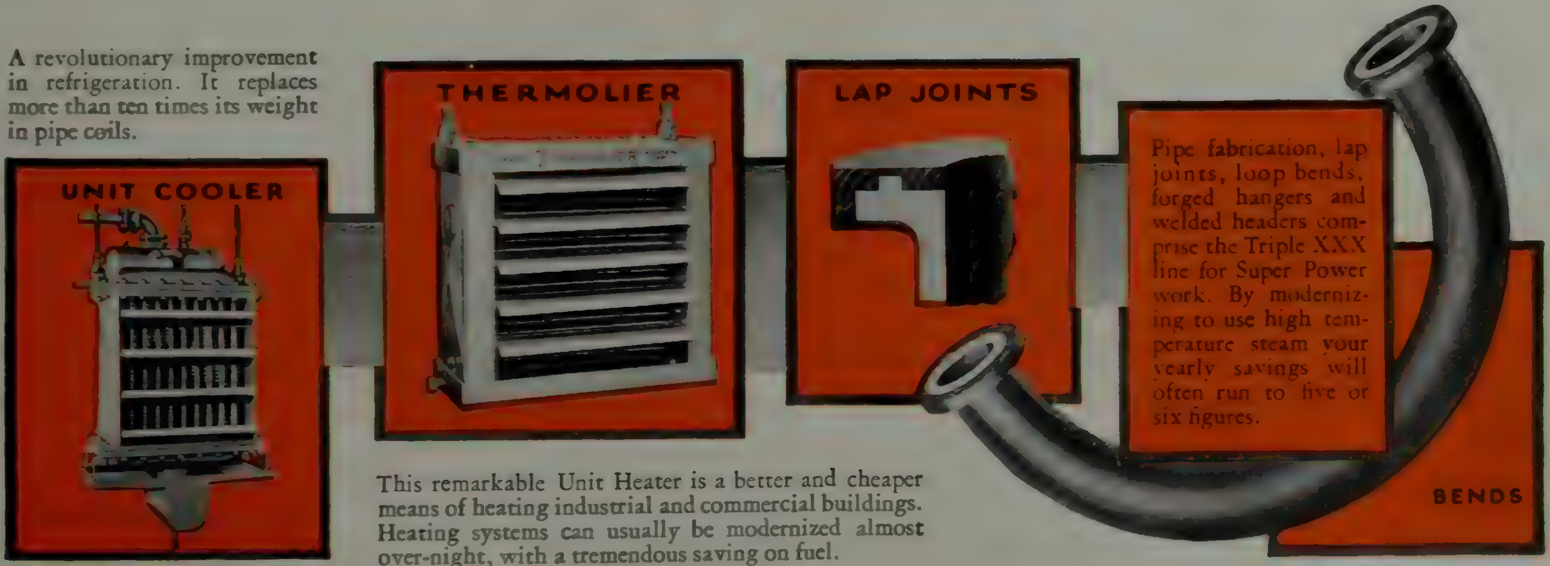
GRINNELL COMPANY INC.

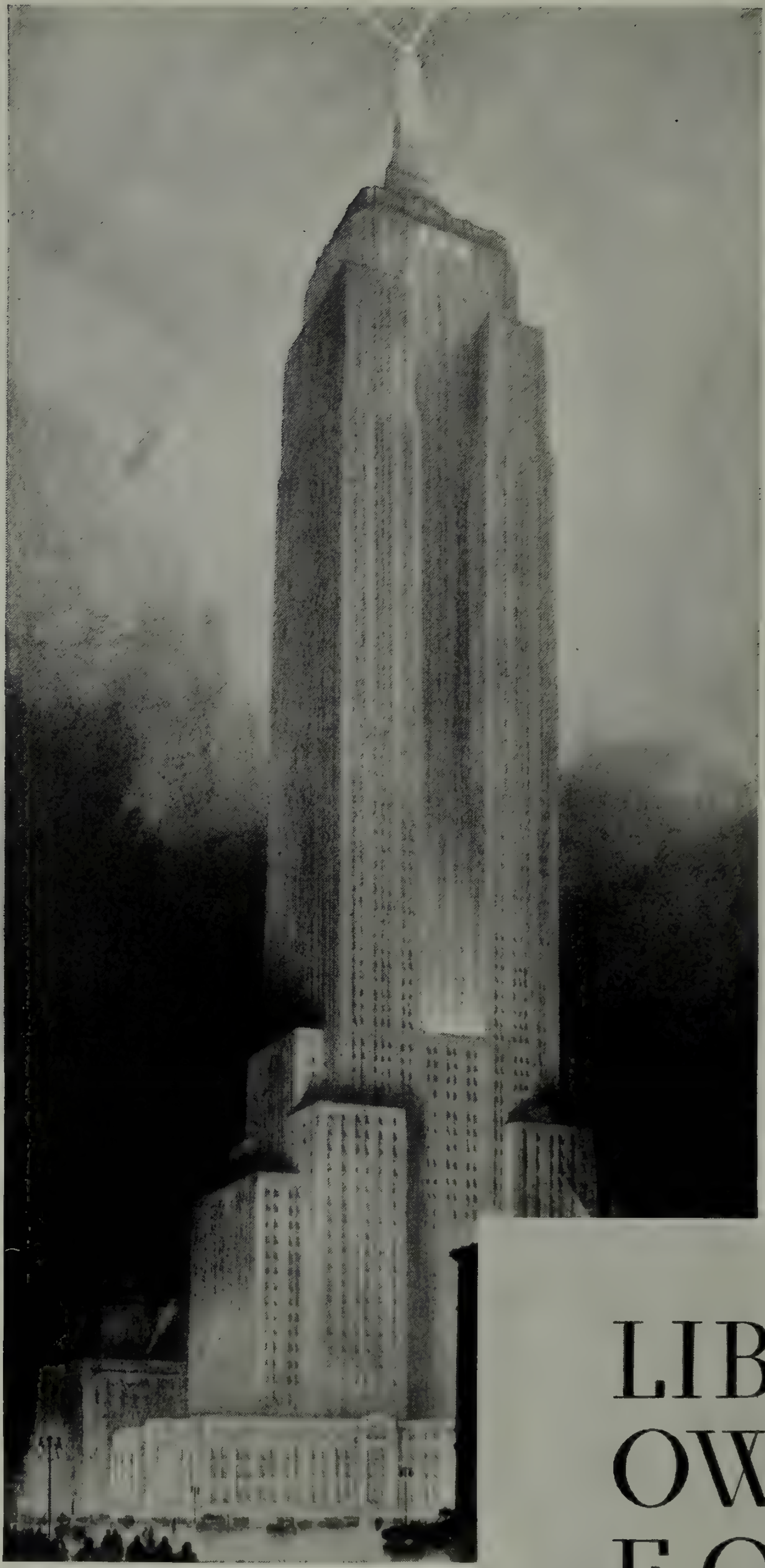
Executive Office: Providence, R. I. ***Branches in all Principal Cities***



A revolutionary improvement in refrigeration. It replaces more than ten times its weight in pipe coils.

This remarkable Unit Heater is a better and cheaper means of heating industrial and commercial buildings. Heating systems can usually be modernized almost over-night, with a tremendous saving on fuel.

Pipe fabrication, lap joints, loop bends, forged hangers and welded headers comprise the Triple XXX line for Super Power work. By modernizing to use high temperature steam your yearly savings will often run to five or six figures.



Empire State Building, New York City
Shreve, Harmon, Lamb — Architects

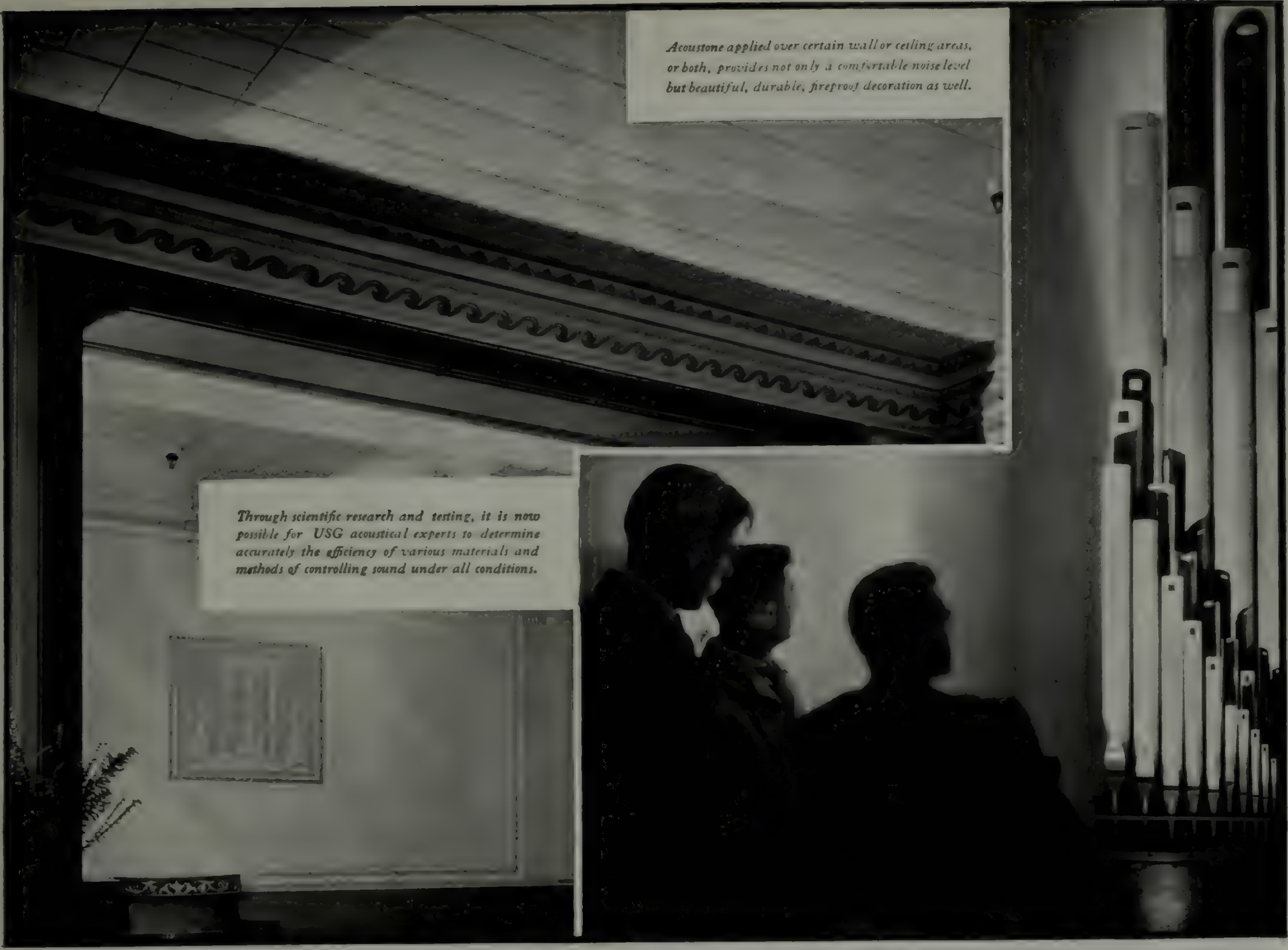
LIBBEY OWENS FORD POLISHED PLATE GLASS

Where nothing but the finest glass is good enough, architects specify Libbey·Owens·Ford Polished Plate. Just as this Plate Glass is the architect's choice for fine residences and buildings throughout the country, so it was specified for the magnificent new Empire State Building—the tallest business structure in the world.

LIBBEY·OWENS·FORD GLASS COMPANY, TOLEDO, OHIO

Manufacturers of Polished Plate Glass; Flat Drawn Clear Sheet Glass; Safety Glass—and distributors of Figured and Wired Glass manufactured by Blue Ridge Glass Corporation.

TUNE IN! FLOYD GIBBONS—*Sunday Evenings—Libbey · Owens · Ford Radio Program—9:30 E. S. T.—WJZ and Associated NBC Stations.*



Acoustone applied over certain wall or ceiling areas, or both, provides not only a comfortable noise level but beautiful, durable, fireproof decoration as well.

Through scientific research and testing, it is now possible for USG acoustical experts to determine accurately the efficiency of various materials and methods of controlling sound under all conditions.

How USG Sound Control Service Can Be Helpful To You

A Message to Architects from the United States Gypsum Company

. . .

MANY architects are now taking advantage of the complete USG Sound Control Service whenever they have any problem in architectural acoustics. This service relieves architects of all details and insures definite, dependable results.

USG Sound Control Service offers:

1. The services of a USG sound control engineer to analyze the problem.

2. Recommendations on materials and methods for attaining a specified predetermined result.

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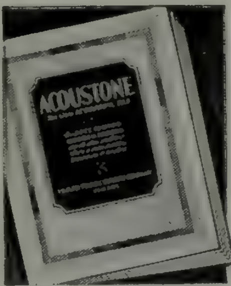
4. Installation of the materials by competent crews.

5. The advantages of having the United States Gypsum Company assume undivided responsibility for the results of the completed job.

On assignments calling for noise absorption, either Acoustone, the USG acoustical tile, or Sabinite Acoustical Plaster, may be used. Where it is desirable to prevent the transmission of noise through walls, floors, ceilings and doors, the USG System of Sound Insulation and USG Sound Insulative Doors are recommended. USG Sound Insulative Machine Bases are supplied to insulate against machinery noise and vibration.



This booklet sent free. *It shows how Acoustone, the USG acoustical tile, controls sound while providing beautiful and harmonious decoration.*

You are invited to use the USG Sound Control Service whenever you have a problem in architectural acoustics. Please write to us for further information or for an appointment with a USG Sound Control engineer. United States Gypsum Co. Dept. 433, 300 W. Adams St., Chicago, Ill.

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Acoustical Correction—Noise Abatement—Sound Insulation

The Modern Doorway . . . .

Desiring the ultimate in beauty and permanency in these exclusive apartments, Kalman Steel Doorways were specified and used so that the redundant architraves might be eliminated and a new flexibility in interior treatment attained.

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Bley & Lyman, Architects
D. R. Martin Construction Co., Contractors

The clean-cut, fresh beauty of the Kalman-Built Doorway speaks for itself. The greater structural strength that prevents plaster cracks for all time is described in a brief folder awaiting your request.

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PITTSBURGH · ST. LOUIS · ST. PAUL · SYRACUSE · WASHINGTON, D. C. · YOUNGSTOWN · *EXPORT OFFICE,* NEW YORK

It's a far call from the first airplane flight of 52 seconds by the Wright Brothers back in 1903 to the modern air liners of today, yet that is only part of the span of years that SPANG has served industry. . . Since 1828

Born with the 19th Century . . . leading the 20th

FOUNDED in an age when quality and excellence of product were the guiding ideals of master craftsmen . . . in an age when men were required to spend many years as apprentices to their craft . . . then it was that SPANG began the manufacture of a grade of pipe that is today recognized as the standard of pipe quality the world over. The great SPANG Pipe Mills of today inherit this old-time quality zeal . . . every length of "SPANG" pipe you use reflects this "SPANG" quality tradition . . . every "SPANG" pipe craftsman takes pride in its production . . . Specify "SPANG", the name that's a guarantee to pipe satisfaction.

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SPANG WELDED STEEL **PIPE**

TWO views of a circular staircase of American Walnut in the home of W. L. Sporborg, Syracuse, N. Y. *Architect:* Dwight James Baum, New York. *Woodworker:* John J. Sherlock, Syracuse.

Year In and Year Out

Walnut's Charm Never Fades

Walnut is pleasant to live with. Its charm is mellow and friendly. It grows old gracefully, revealing the ravages of wear but slightly, acquiring through use a patina that makes it more and more a part of the home.

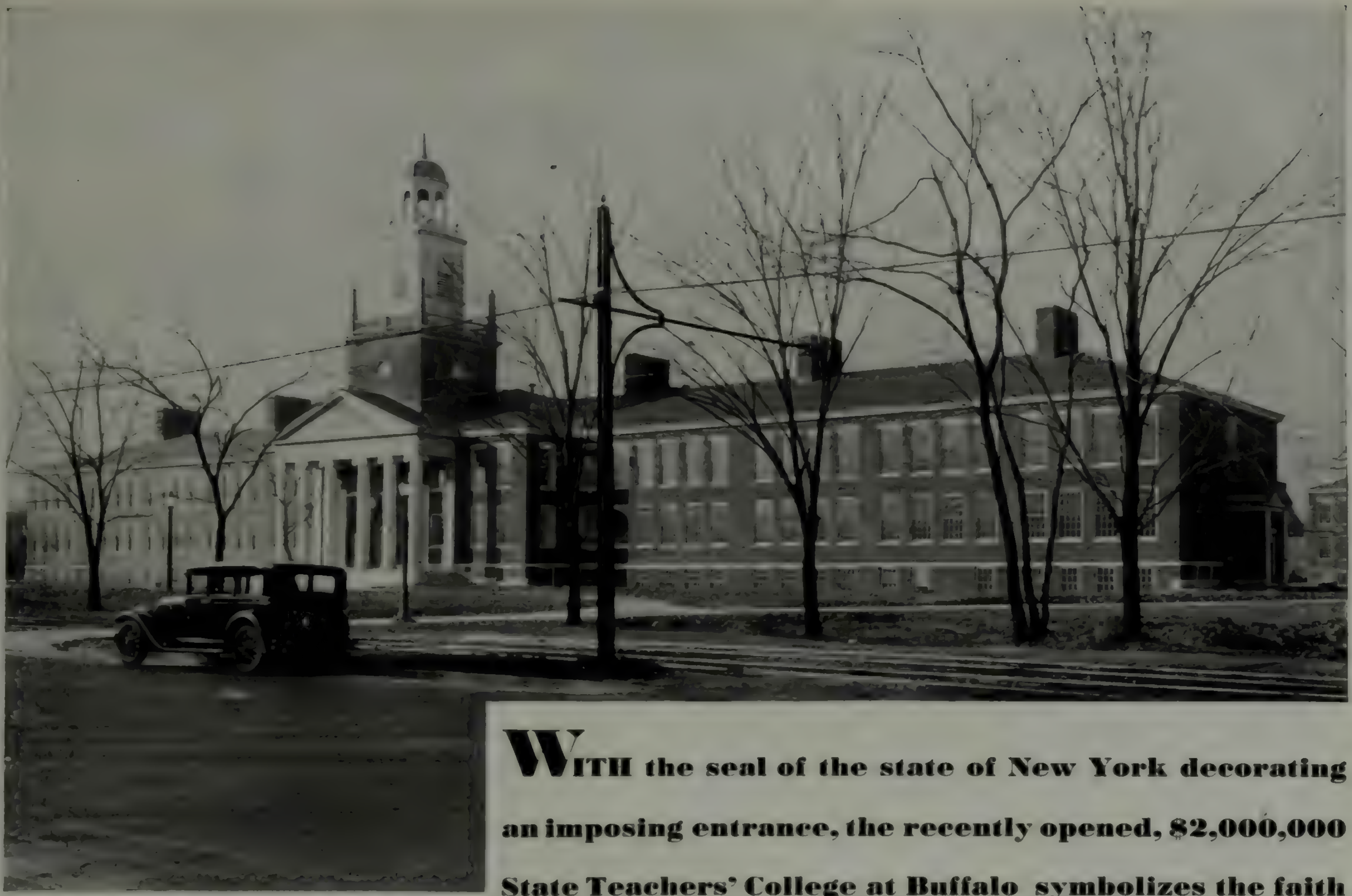
Warm in tone, its neutrality of color lends itself to harmonization with changing decorative schemes. It is at home with the formal or the modest, with the classical styles or the modern. And in whatever style of home, American Walnut contributes a distinction which is the result of centuries of association with fine things.

You can rely on walnut to add both charm and value to any residence.

AMERICAN WALNUT MANUFACTURERS' ASS'N
Room 1744. 616 South Michigan Avenue, Chicago, Illinois

AMERICAN WALNUT

AMERICAN WALNUT



NEW YORK STATE TEACHERS' COLLEGE, BUFFALO

Wm. E. Haugaard, New York State Commissioner of Architecture, Albany, N. Y.

W. P. Nelson Company, Cleveland, Ohio
Painting Contractor

"Save the surface and you save all"

WITH the seal of the state of New York decorating an imposing entrance, the recently opened, $2,000,000 State Teachers' College at Buffalo symbolizes the faith of a great commonwealth in popular education. There are five buildings in the group, of which the above is the principal structure. Among the varied Pratt & Lambert products used was "61" Floor Varnish. Possessing the maximum of resistance to wear and water, "61" Floor Varnish accentuates wood grain, adds to the charm of fine interiors and long preserves the original beauty and freshness of new floors. Ask the nearest Pratt & Lambert Architectural Service Department for particulars of any finish desired.

PRATT & LAMBERT-INC., Varnish, Enamel and Lacquer Makers, 108 Tonawanda Street, Buffalo, N. Y. (Phone Delaware 6000); 3301 38th Avenue, Long Island City, N. Y. (Phone Stillwell 5100); 320 W. 26th Street, Chicago, Ill. (Phone Victory 1800). In Canada: 28 Courtwright Street, Bridgeburg, Ontario.

TRADE MARK
PL
REG U S PAT OFF

PRATT & LAMBERT VARNISH PRODUCTS

Note how Desco Store Front construction used in this J. C. Penney Co. store in Seattle, Wash., enhances the value of the window displays.

Desco
METAL
REG. U.S. PAT. OFFICE

STORE FRONTS

are Preferred from Coast to Coast

ARCHITECTS for progressive merchants throughout the country are indicating their appreciation of quality construction by specifying Desco Store Fronts for new buildings and remodeled stores. They realize that the modern designs of Desco Store Fronts set off the window displays to best advantage and harmonize with any building design. They recognize the ability of Desco Store Fronts to protect the glass against abnormal wind pressure. They like the wide variety of metals in which Desco Store Fronts can be obtained, including copper (plain or embossed), solid bronze in all standard finishes and aluminum alloy (white metal). Consider these advantages when preparing the specifications for your next building.

For full architectural details see Sweet's catalog. Write us for complete working data and price list. Remember, too, wherever you are there is a distributor near you. We also carry a complete line of "Desco" construction material in our New York City Warehouse.

DETROIT SHOW CASE CO.
1670 West Fort Street • Detroit, Michigan
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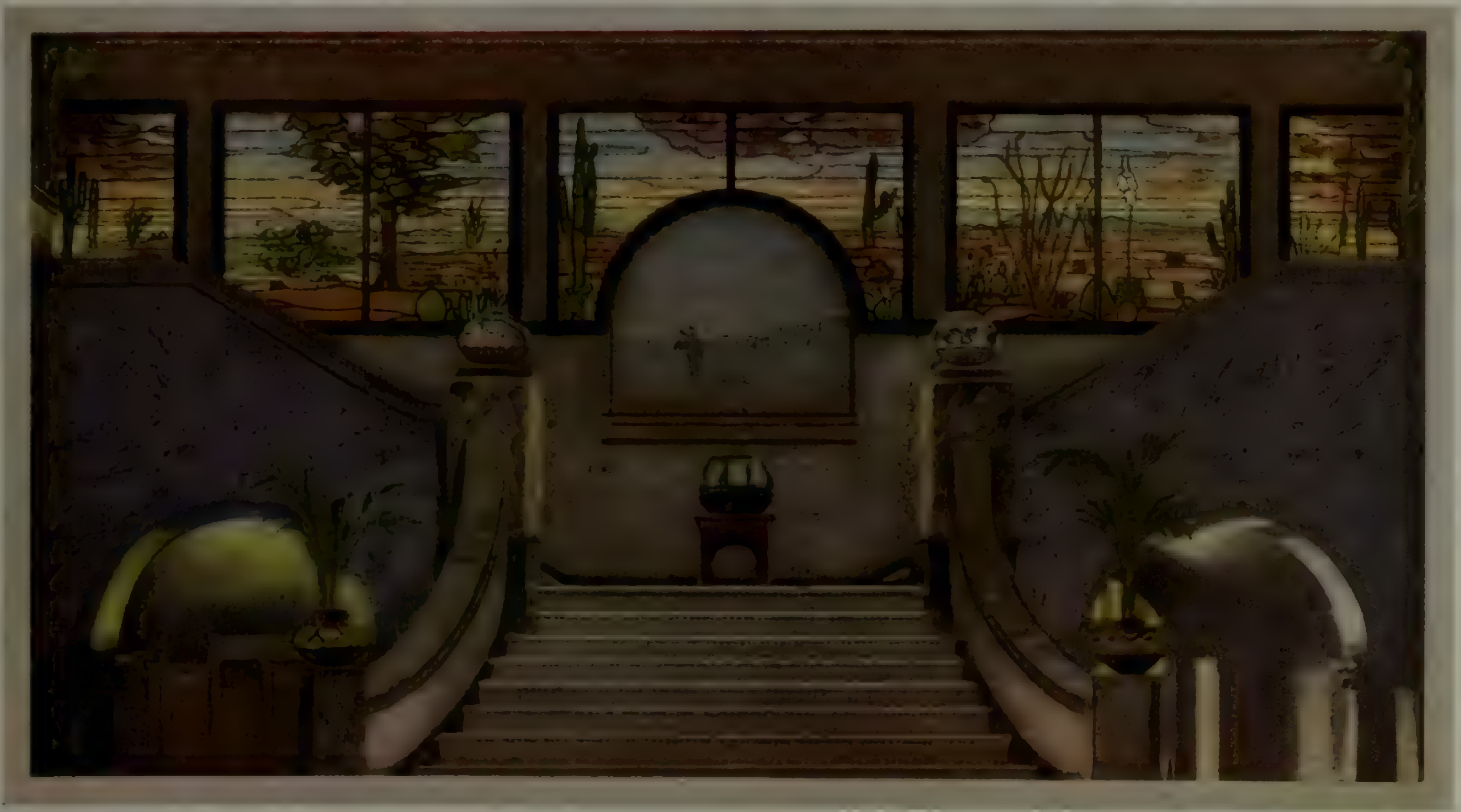
PICTURES *that never fade*



Every business has its traditions—the history of its foundation—the milestones in its progress—the service it renders to humanity—the perpetuation of its founders' high ideals—traditions that inspire those who are carrying on. Traditions that can be pictured in glorious, everlasting charm through the medium of leaded glass.

Colorful Glass is the pigment of ever-lasting charm which, when worked skillfully, transforms plain windows into lighting worthy of a place among the fine arts.

You architects who plan modern commercial structures and put beauty into steel and stone, consider how art in glass lends itself to illustrative treatments of unusual beauty and acceptance.

The foyer of an industrial institution can picture in glass the industries it touches; the public utility, its community's spirit; the municipal building, its historical high spots; the hotel, its service or scenic setting. And the public, unstintedly, admires.

Within easy reach is an artist-craftsman who will gladly assist you in designing a window, skylight, transoms or office partitions that will picture in the permanent pigments of colored glass the traditions and service that lie behind the commercial structure you are planning.

The above window, 45 feet long and 6 feet high, in the Hotel Gadsden, Douglas, Arizona, admits 90% of the daylight to the lobby. It is of opalescent and flint glass with ¼″ sheet plate glass protecting the exterior. By Baker & Baker Studios, El Paso, Texas. Trost & Trost,. Architects, El Paso.

KOKOMO
OPALESCENT
GLASS · · · CO.
1300 S. Market St. · Kokomo, Indiana

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MANUFACTURERS OF OPALESCENT GLASS AND CATHEDRAL GLASS (PLAIN AND SEEDY, IN CLEAR FLINTS AND TINTS)

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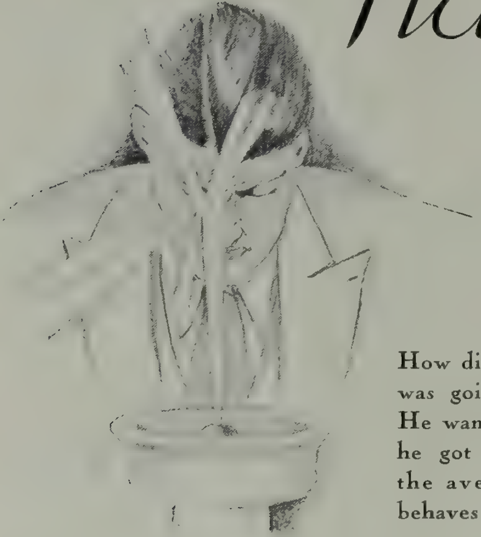

How did he know this was going to happen? He wanted a drink but he got a bath . . . the average fountain behaves that way!

or this

Here we see a Halsey Taylor fountain at work . . . Stream automatically controlled, and remains uniform in height regardless of pressure variation.

After all . . .
who wants a shower?

A SHOWER is refreshing . . . yes it is, in its place! But not when you expect a drink of water! And yet this happens so often one wonders if there is any fountain made that overcomes this objection. Architects know there IS! In Halsey Taylor fountains the stream is automatically controlled and the height is always uniform regardless of pressure variation. The two-stream projector is a further safeguard against contamination, as lips need never touch the source of supply! Sweet's will give you further details. Or write for further information . . . The Halsey W. Taylor Company, Warren, Ohio.

Central National Bank
Richmond, Va.
John Eberson and Carneal,
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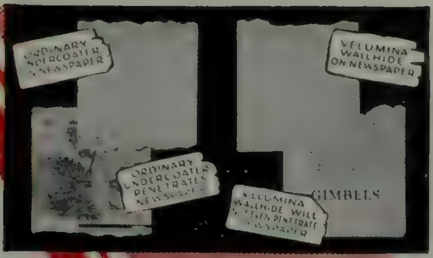
HALSEY TAYLOR

Drinking Fountains

THE SPECIFICATION FOR SANITATION

Seals

On Even the Poorest Surface

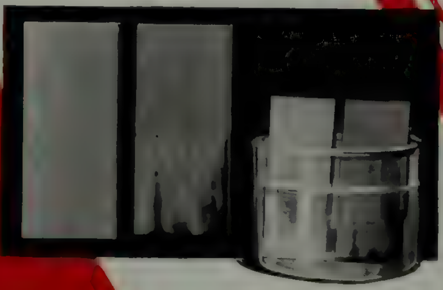

ORDINARY UNDERCOATER ON NEWSPAPER
VELUMINA WALLHIDE ON NEWSPAPER
ORDINARY UNDERCOATER PENETRATES NEWSPAPER
VELUMINA WALLHIDE WILL EVEN PENETRATE NEWSPAPER
GIMBELS

Saves

Labor and Time

Resists

Alkali and Lime Action



NEVER before such a trouble-proofer for painting plaster — Velumina Wallhide First Coater that "holds itself out", sealing and surfacing against lime, moisture, alkali and absorption spots — and then Velumina Wallhide Finishing Coat, sealing and surfacing any skips of first coater, or where "nobs" of plaster have been broken off!

Velumina Wallhide

First Coater and Finishing Coats of Flat, Satin or Stipple Whites

Write for booklet, *"Velumina Wallhide System!"*

Velumina Wallhide first coater is fine under any flat wall paint, but for greatest safety and insurance of getting the equal of three coat work in two applications use the Velumina Wallhide System. That's Velumina Wallhide First Coater followed by Velumina Wallhide Finishing Coat — either Flat, Satin or Stipple White. Only six hours drying time needed in between!

Never, never before, such a spot stopper and trouble-proofer!

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Paint, Varnish and Lacquer Factories, Milwaukee, Wis. Newark, N. J., Portland, Ore., Los Angeles, Cal.

PITTSBURGH
Proof Products
Glass-Paint-Varnish-Lacquer
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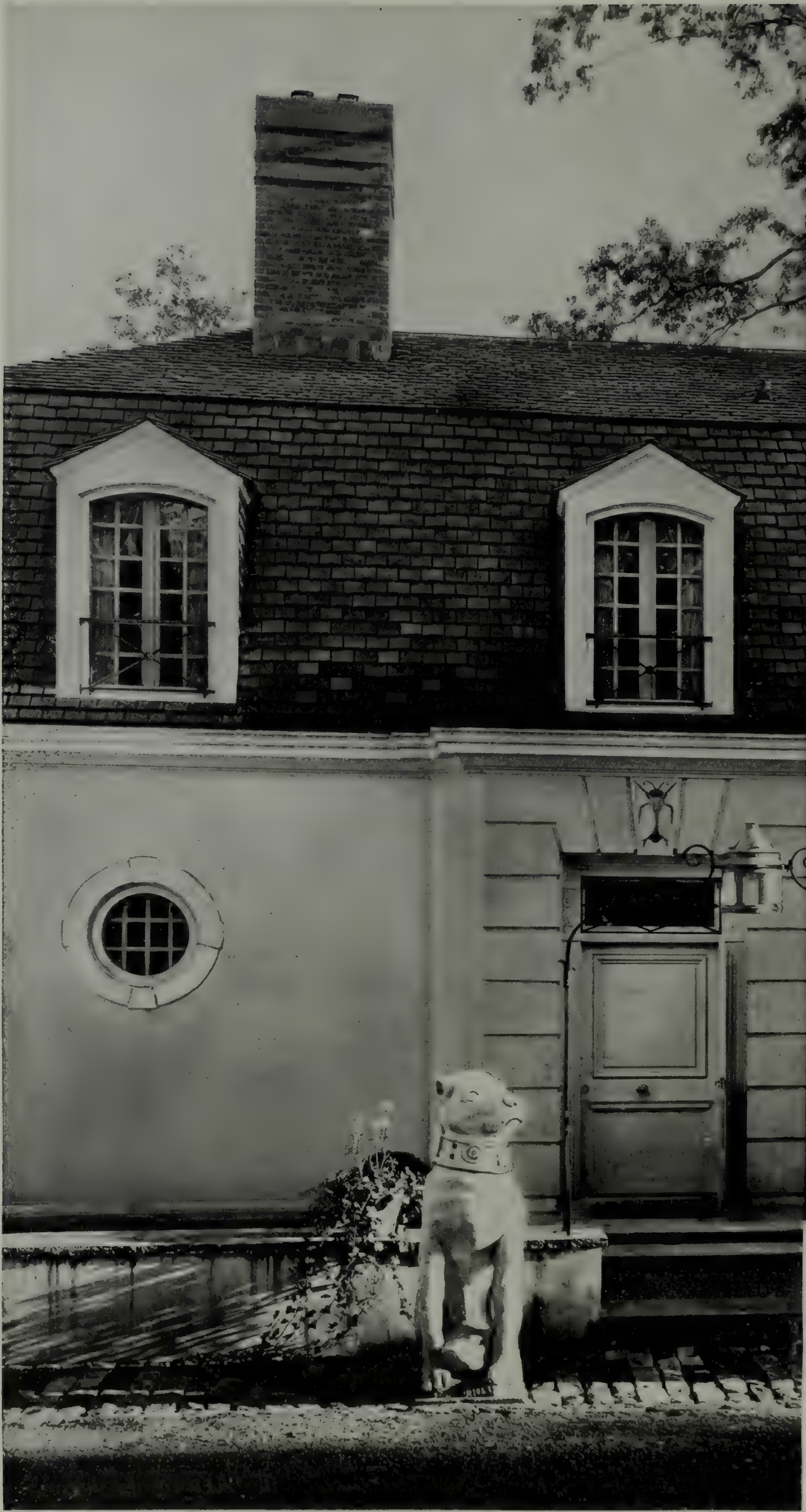

BY THE CHOICE OF TILE *for this Mansard roof, all hard sheen and reflection have been avoided. Ludowici Hand Made Shingle Tile has been used with perfect appropriateness. There is a pattern of Ludowici Tile equally suitable for each type of architecture. Their beauty and protection against weather and fire are everlasting. We shall be glad to mail our catalogue or have a representative call upon you. And permit us to call your attention to our pages in Sweet's.*

Home of Thomas R. Coward, Bedford, New York.
Breed, Fuller & Dick, architects.

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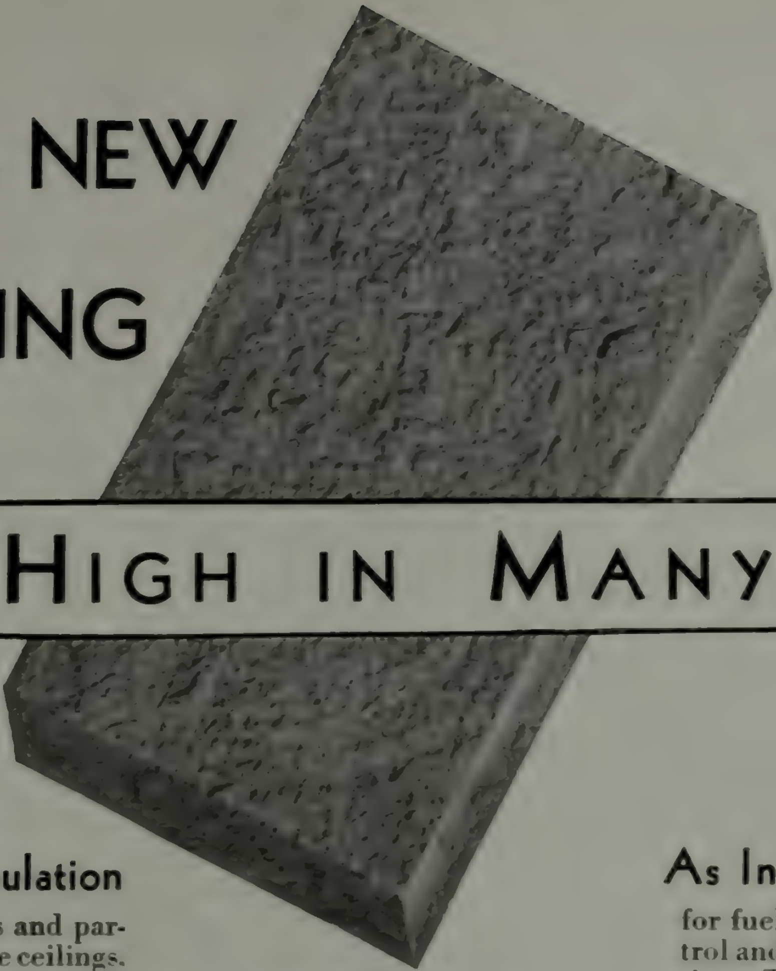

RANKS HIGH IN MANY FIELDS

As Residential Insulation

in outer walls, inner walls and partitions, under roofing, above ceilings, and under flooring.

Cornell In-Cel-Wood combines all qualities essential to high insulating efficiency—*low thermal conductivity* —0.32 B.T.U.—*light weight* due to millions of dead air cells, constituting the most efficient insulation—*ample thickness,* full ½ inch.

In-Cel-Wood is supplied in standard sizes 4 ft. x 6, 8, 9, 10 and 12 ft.—all full ½ inch thick.

As Sound Deadener

for use in residential buildings, under flooring and in walls, ceilings and partitions; and in churches, lecture halls, theatres and auditoriums for acoustical correction. Cornell In-Cel-Wood with its fibrous textured surface and millions of dead air cells offers maximum resistance to the transmission of sound.

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in outer walls, under wood siding, shingles, brick or stucco.

Made entirely of thoroughly seasoned *new wood* fibre (no waste products), In-Cel-Wood provides greatest strength in proportion to weight, for any similar material. It adds substantially to the structural strength of the building. Its protection is permanent because In-Cel-Wood is thoroughly impregnated against moisture and other deteriorating elements.

As Interior Wall Covering

Light cream in color (almost white), Cornell In-Cel-Wood makes an attractive wall covering without further decoration. If desired, it may be finished in any color scheme with paint, calcimine or plastic paint.

As Industrial Insulation

for fuel economy, temperature control and the prevention of condensation. The low thermal conductivity of In-Cel-Wood—0.32 B.T.U.—and its light weight make this board ideal for industrial plants.

Although In-Cel-Wood is one of the most efficient insulating boards for application under industrial roofing, it is usually used in one inch thickness—either two layers laid separately or two layers stapled together as one board. For special uses, In-Cel-Wood is also available 1½-inch thick (3 boards stapled together).

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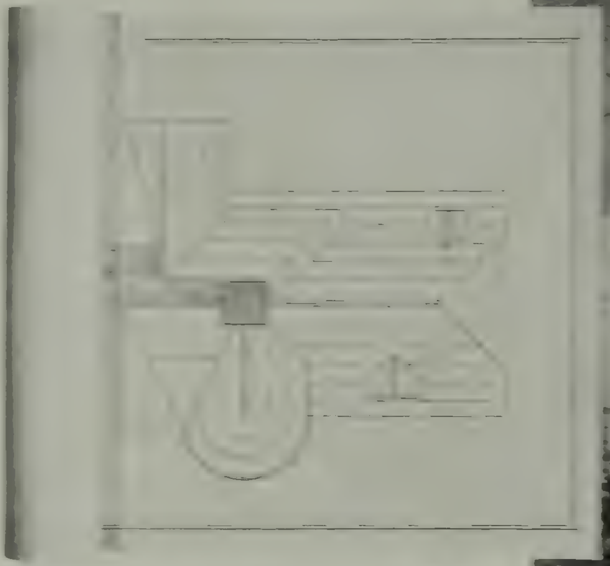
For protection against cracks, specify Cornell In-Cel-Wood Lath. This is regular ½″ thick In-Cel-Wood in panels 18″ x 48″, with special shiplapped edges. This insulating plaster base grips plaster with a bond value of 2,140 lbs. per sq. ft. Compare this with any other lath or plaster base!

Cornell Wood Products Company, 307 N. Michigan Ave., Chicago, Ill.

Cornell
IN-CEL-WOOD
"It's in the Cells"

SLATE-FOR-THE-ROOF



THE DESIRED EFFECTS ARE ACCOMPLISHED BY SKILLFUL DESIGNERS WITH YEARS OF EXPERIENCE.

A - RESIDENCE - WITH - THAT - CERTAIN - FASCINATION—THE - CHARM - OF THE - BEAUTIFUL—BY - LEWIS - BOWMAN - ARCHITECT - OF - BRONXVILLE NEW - YORK—IS - ONLY - ANOTHER - EXAMPLE—AND - THE - ROOF - WITH ITS - SLATES - OF - DELICATE - BLENDINGS - WHICH - ARE - HAND - WROUGHT AT - OUR - QUARRIES - TO - FIT - A - CAREFULLY - PREPARED - SETTING - PLAN

- BY -

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N. Y.

LOW COST HEAT *for* ALL TYPES OF BUILDINGS...

Never before has a new type of heating plant been so quickly accepted . . . for nearly every type of structure requiring heat or hot water. In homes, apartments, clubs, schools, churches, factories, and even in swimming pools and sea-going yachts . . . the Gar-Wood continues to win unquestioned approval.

Gar-Wood engineers not only developed an entirely new boiler design especially for firing oil or gas . . . but a burner, equally revolutionary, that effects practically complete combustion from the moment it starts.

The Gar-Wood boiler is built literally up-side-down! The combustion chamber is at the top. The hot gases travel downward . . . through long, narrow flue passages . . . between flattened water tubes, baffled to cause a scrubbing action of the gases against their walls.

In this way the principle of the automobile radiator is utilized to—(1) vastly increase the area of heating surfaces exposed to the hot gases; (2) completely absorb the intense heat of the burning oil, and transfer it to the boiler water; (3) stop the loss of heat through the stack.

Built for and engineered into each other, boiler and burner form a complete, balanced heating unit . . . and its makers assume an undivided responsibility for its performance. For three years the Gar-Wood has been supplying automatic oil heat for every type of building at a cost far below that of any other type of heating unit. Write for the new Gar-Wood book.

GAR WOOD ENGINEERING CO.
4194 BELLEVUE AVE., DETROIT, MICH.

Gar-Wood supplies hot water for yacht of Charles Sorenson, Detroit, Michigan

Swimming pool of L. A. Young, 918 Boston Blvd., Detroit, Mich., is Gar-Wood heated.

Twice the heat and saves $264 yearly in home of W. P. Harris, Grosse Pointe Park, Michigan . . . .

Lower cost than with either coal or oil in home of J. R. Murray, 1182 Boston Blvd., Detroit, Michigan .

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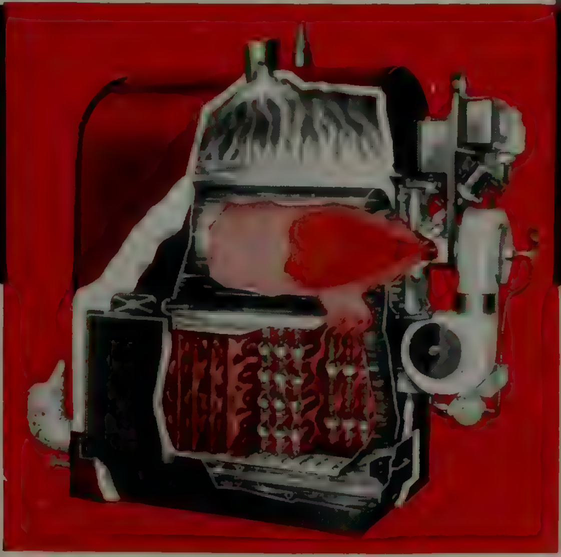
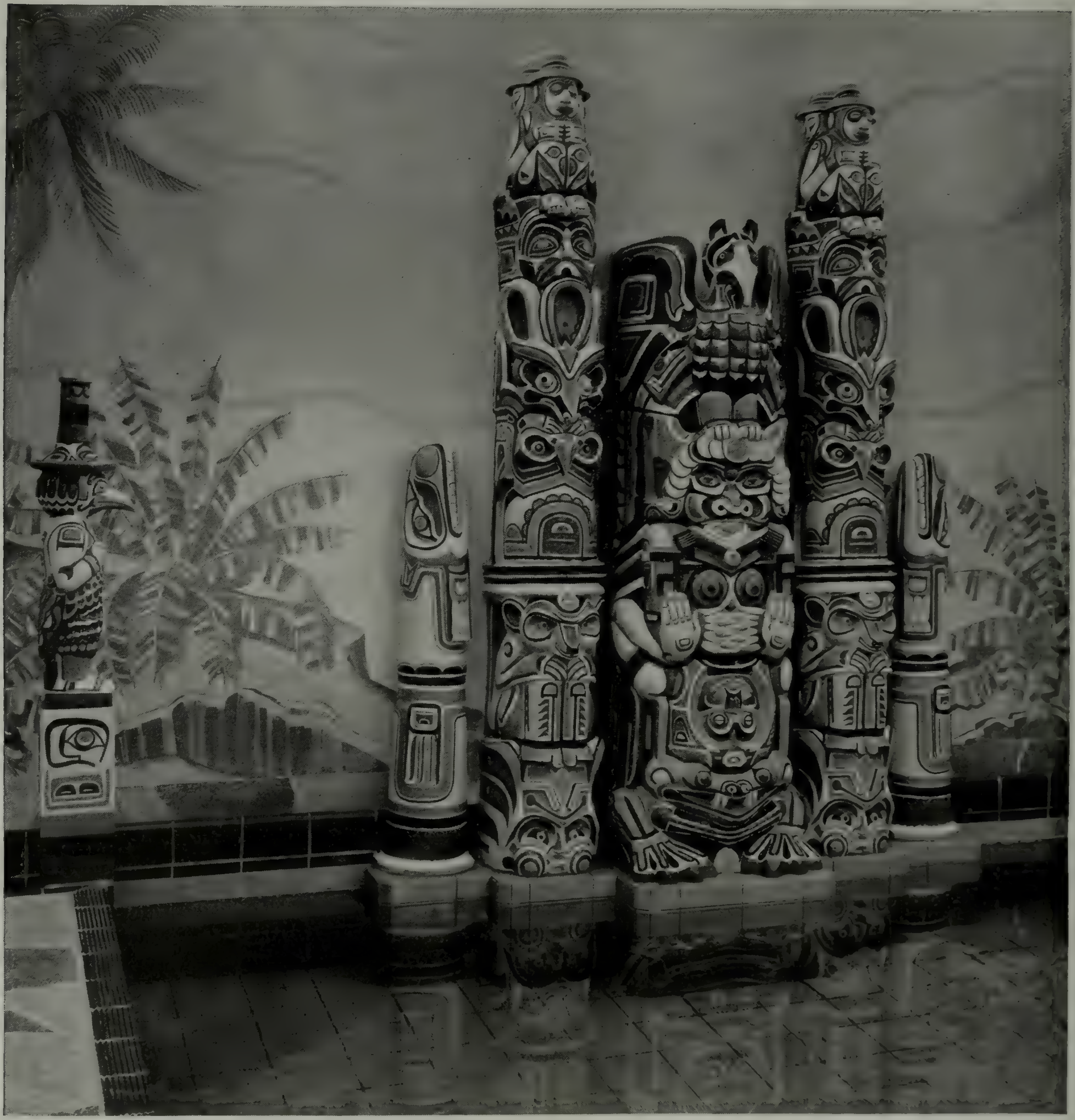
Home of Wm. P. Green, Forrer and Grand River Ave., Detroit, Mich.

Responsible organizations now distributing through the heating trade should investigate the Gar-Wood franchise. Write to factory for details.



Gar-Wood

FEDERAL SEABOARD TERRA COTTA CORPORATION



RESIDENCE of Mrs. C. R. Holmes, Sands Point, L. I. Edgar I. Williams, Architect; Gardner Hale, Decorator; The Whitney Company, Builders.

THE polychrome fountain at the swimming pool is of lustrous glazed Terra Cotta in red, green, blue, black and white against a sand-tinted back-ground, forming a striking combination with the blue-greens of the pool.

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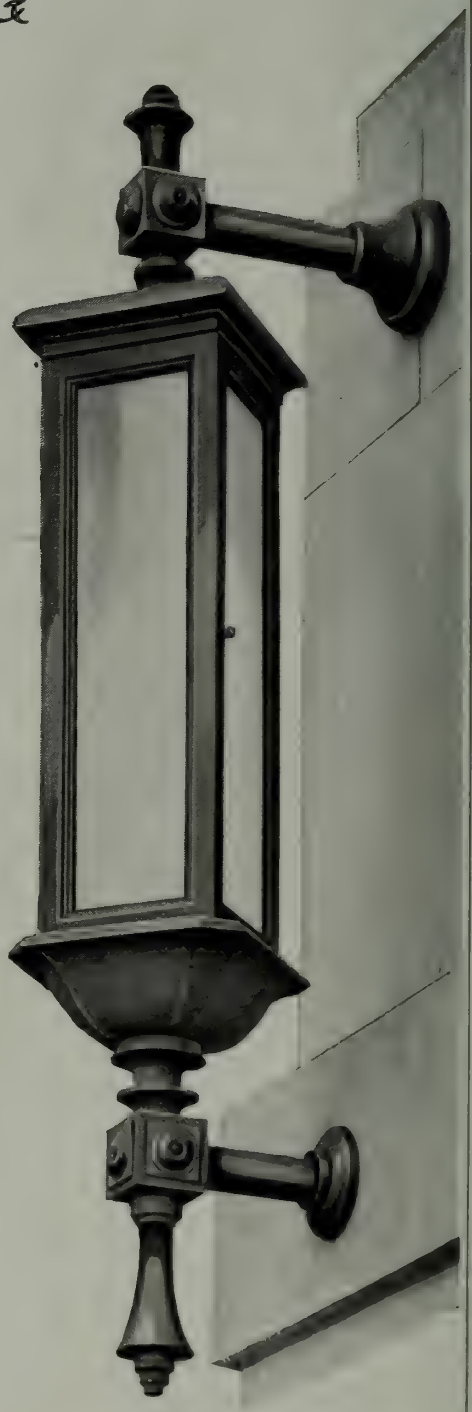

Cast Bronze Lantern, North Wing, New Pennsylvania R. R. Station, Phila., Pa. Lantern Design by Paul P. Cret, Architect. Graham, Anderson, Probst and White, Architects for the main station building.

SMYSER-ROYER COMPANY

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THREADED CAST IRON PIPE WAS INSTALLED FOR SOIL, WASTE, VENT, RAIN LEADER LINES

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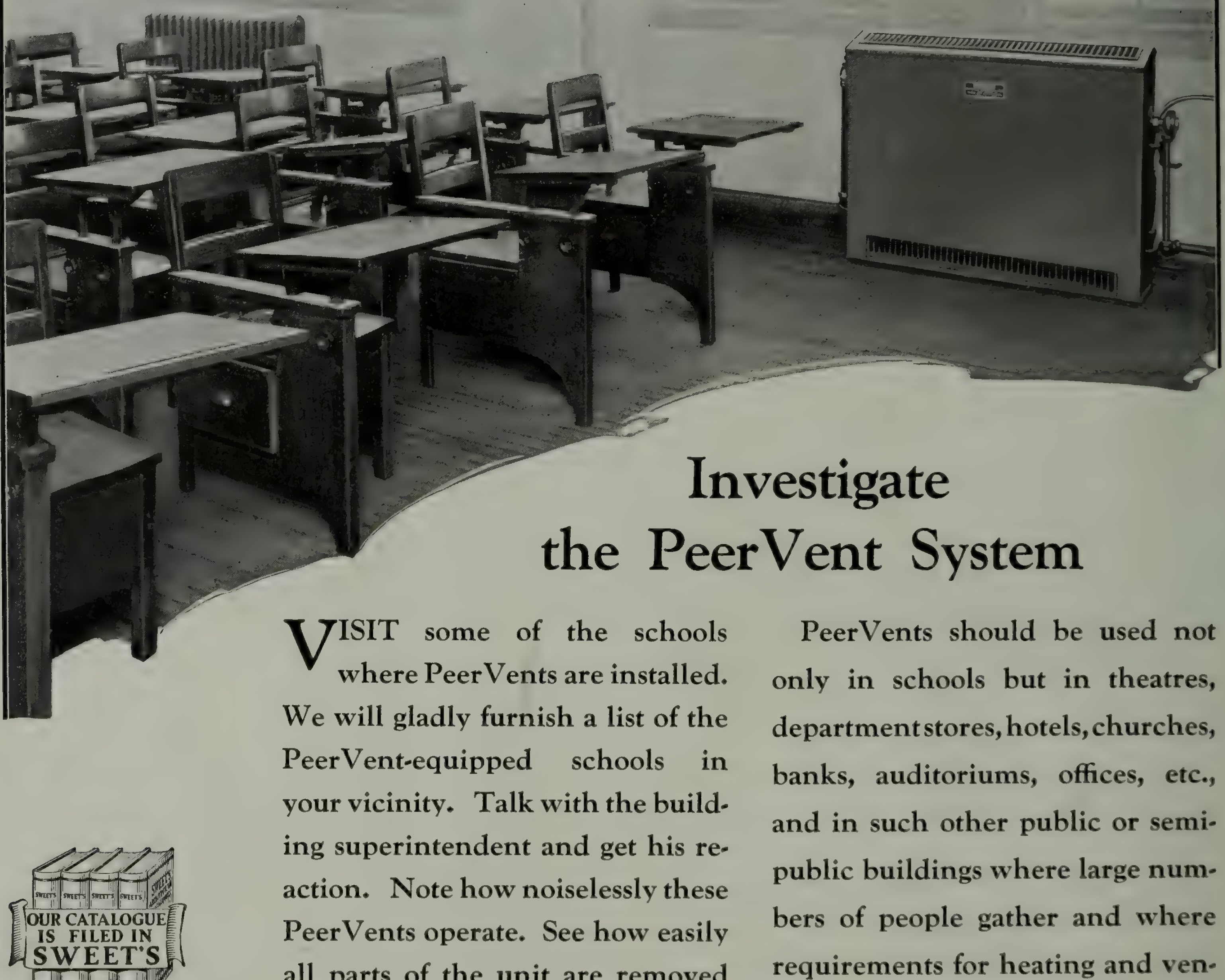

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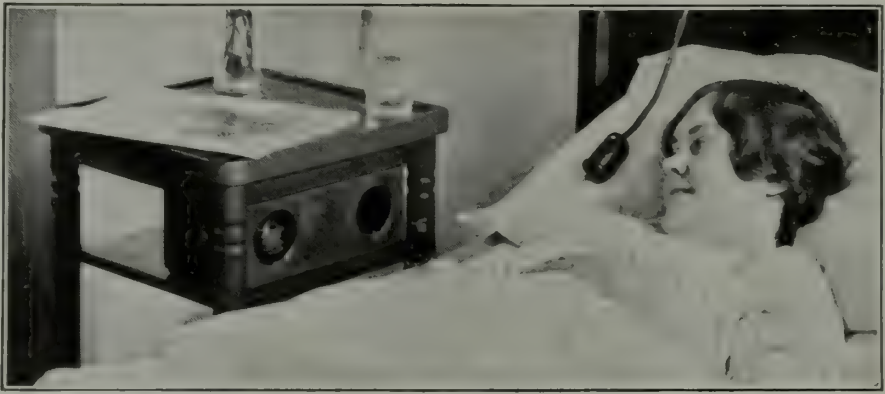

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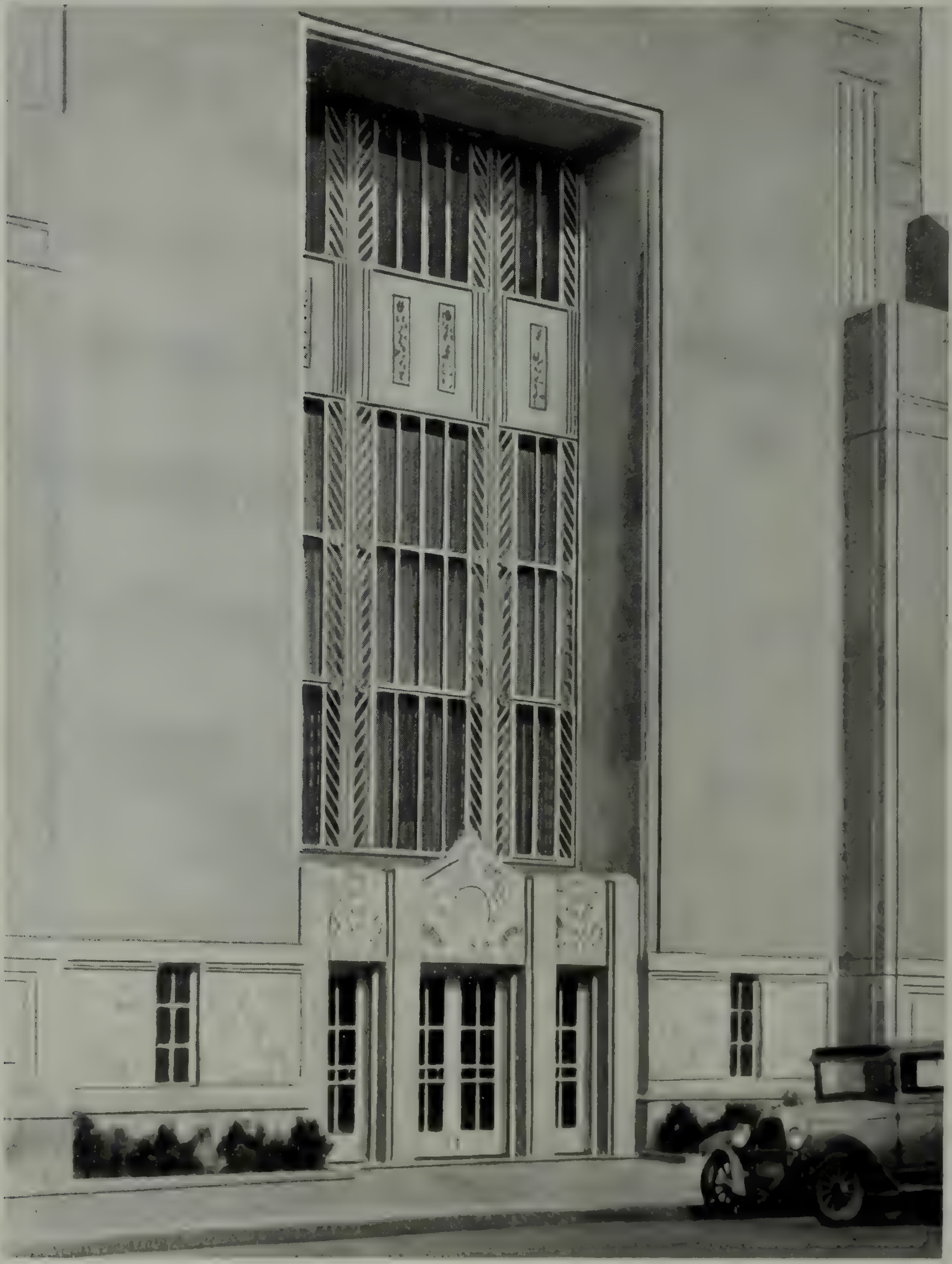

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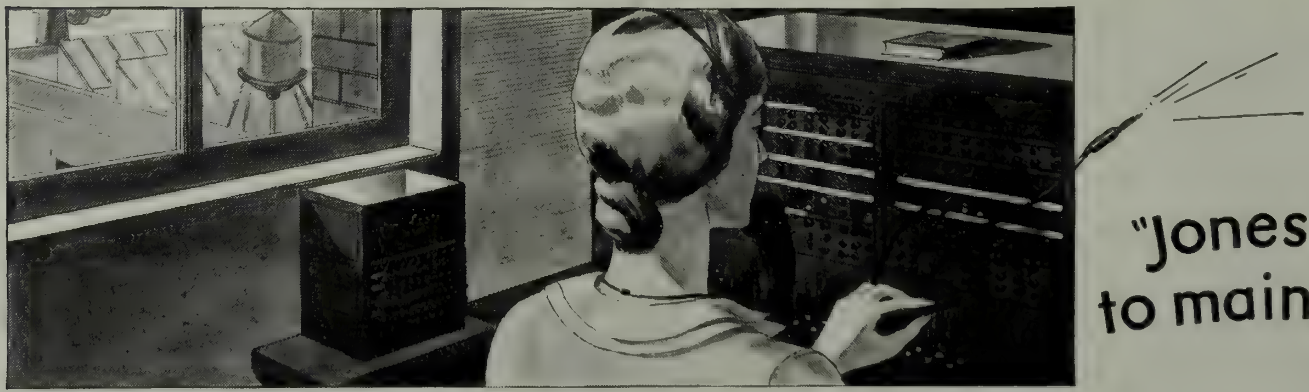
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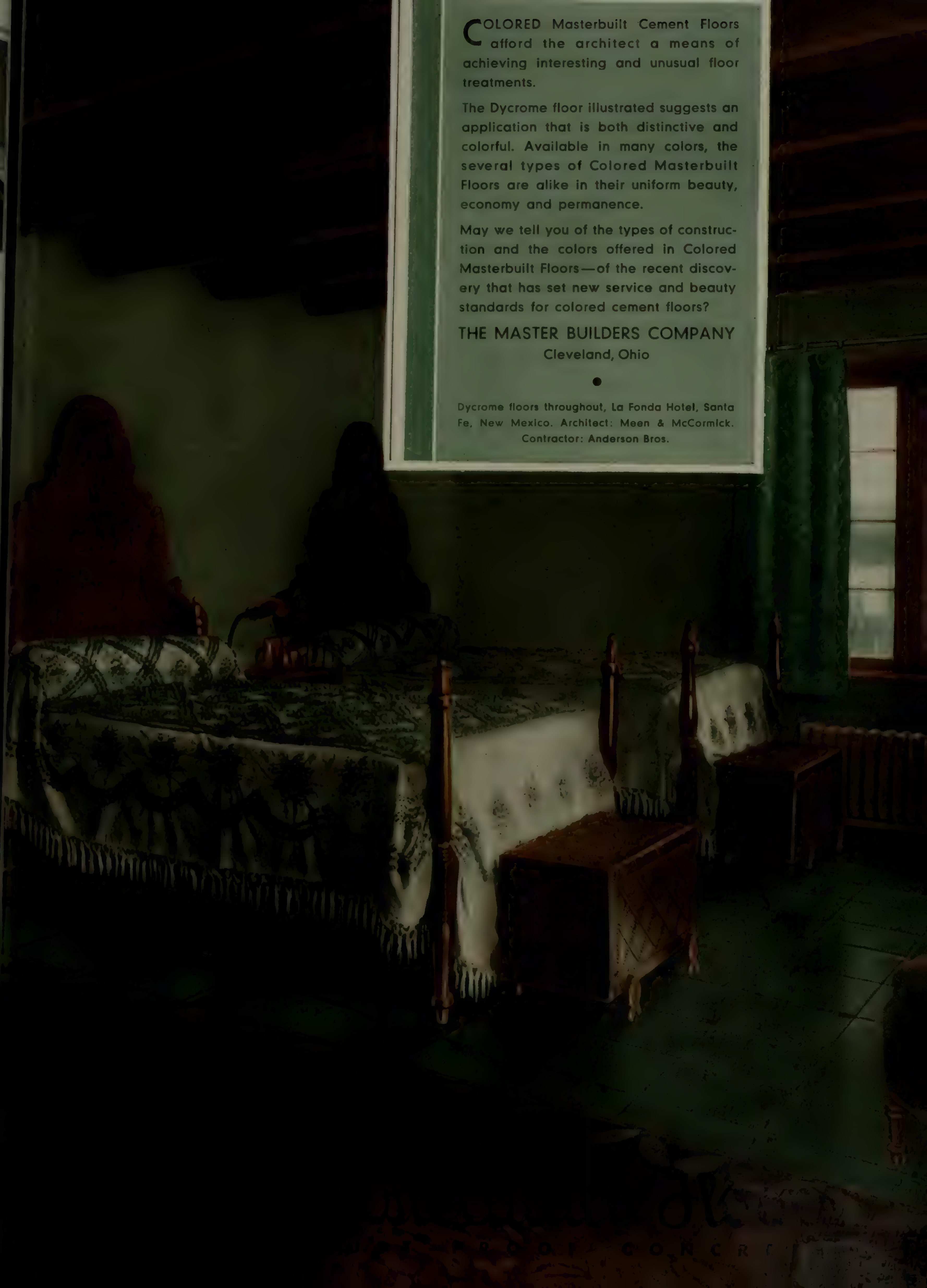

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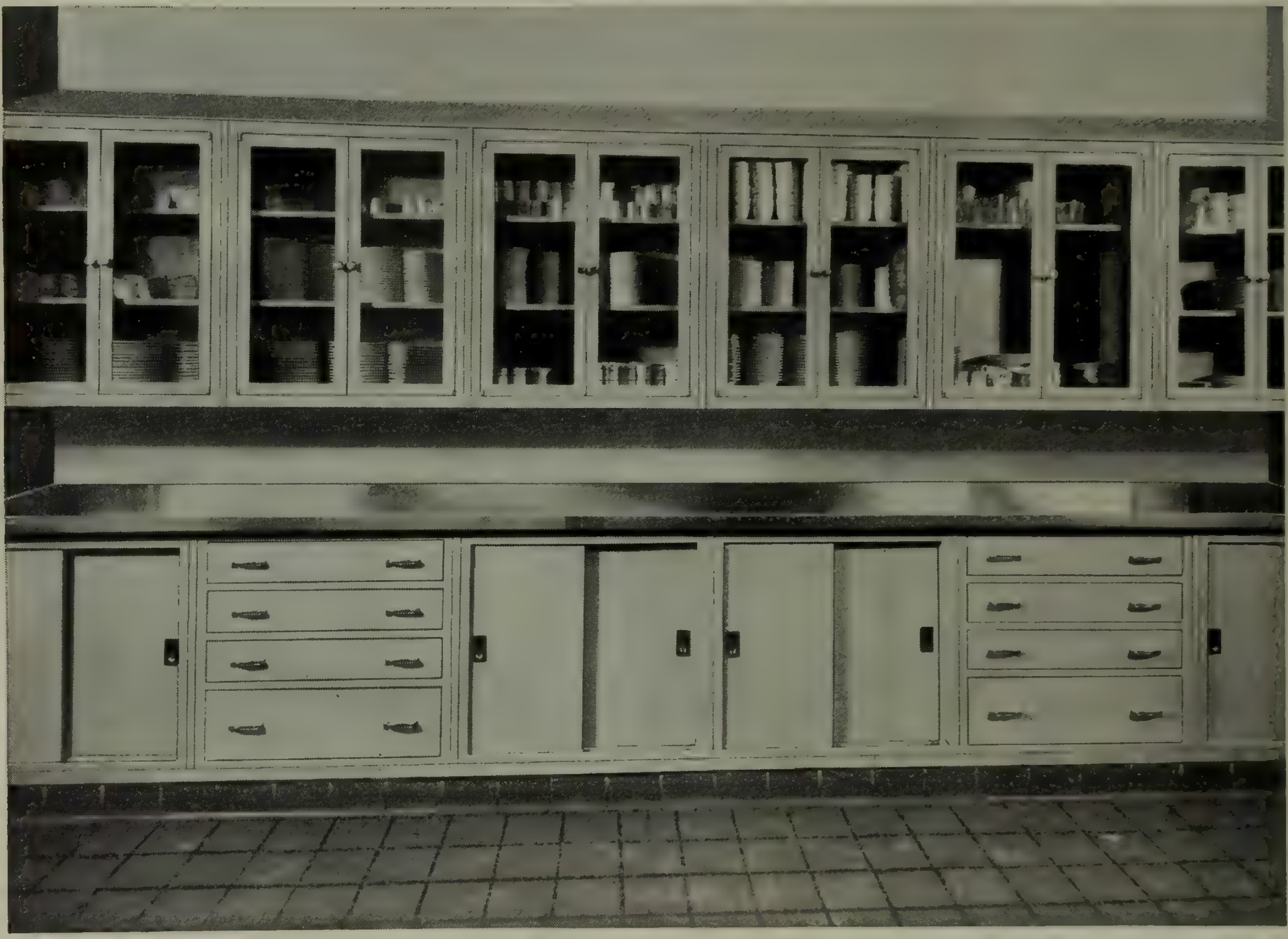

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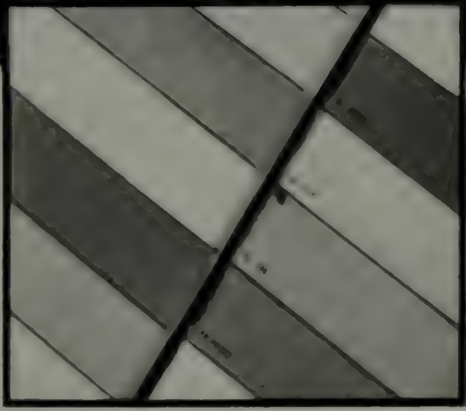

CLOSE-UP OF PANELS at a du Pont paint farm. This finish has been exposed at a 45° angle—facing south—for many months. Experience has proved that such exposure is twice as severe as the normal vertical exposure on the side of a house.

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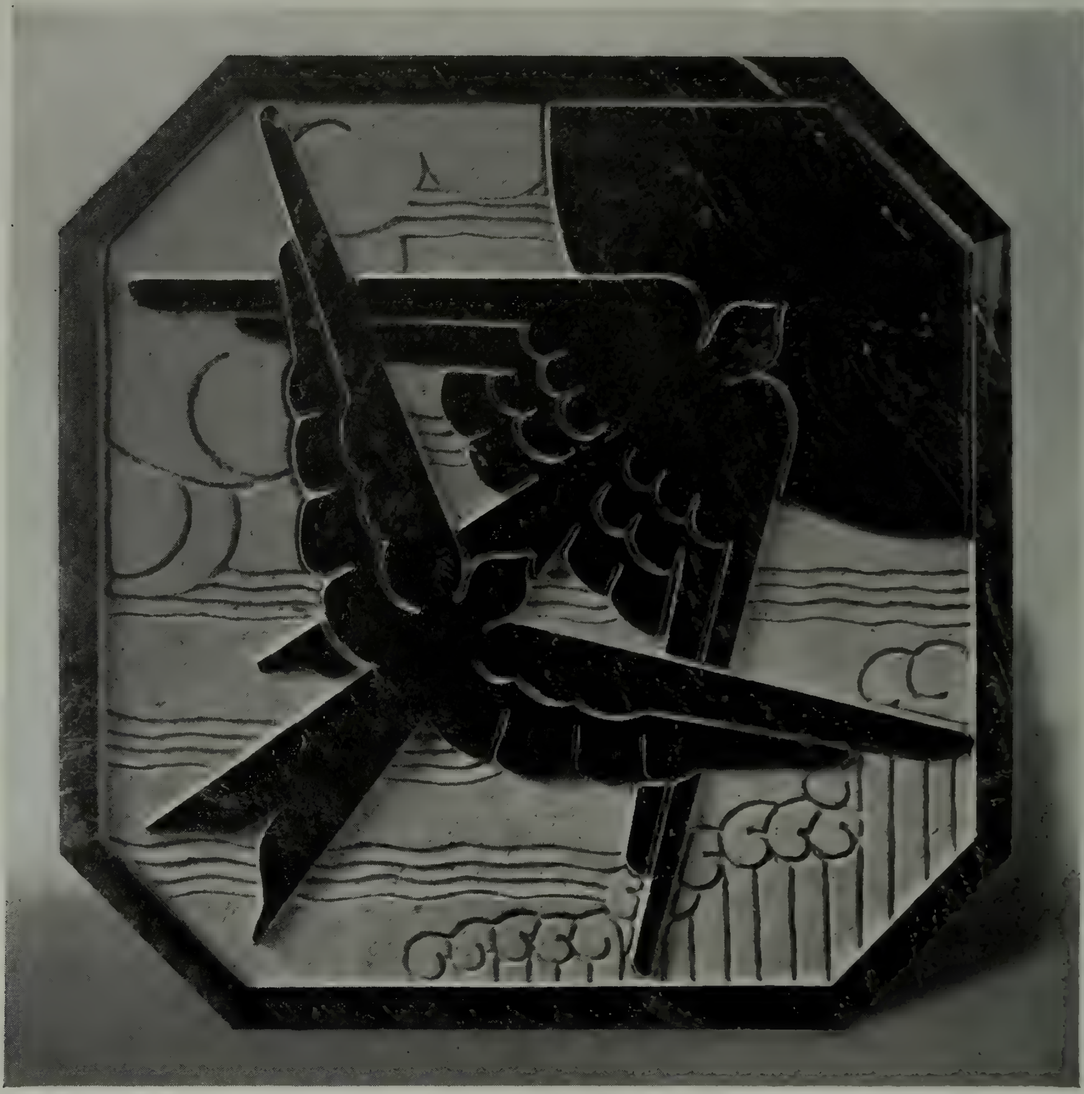

PLATE 5

The Modernistic Movement

This picture represents one of the panels of Verde Antique Marble in the Indiana Power Company Building, South Bend, Indiana. The work was finished under the supervision of the Art Terrazzo & Tile Company.

Here is a case where the design is well adapted to the business it symbolizes—where the modern features are strengthened by the contrast between the cut and polished surfaces of the marble.

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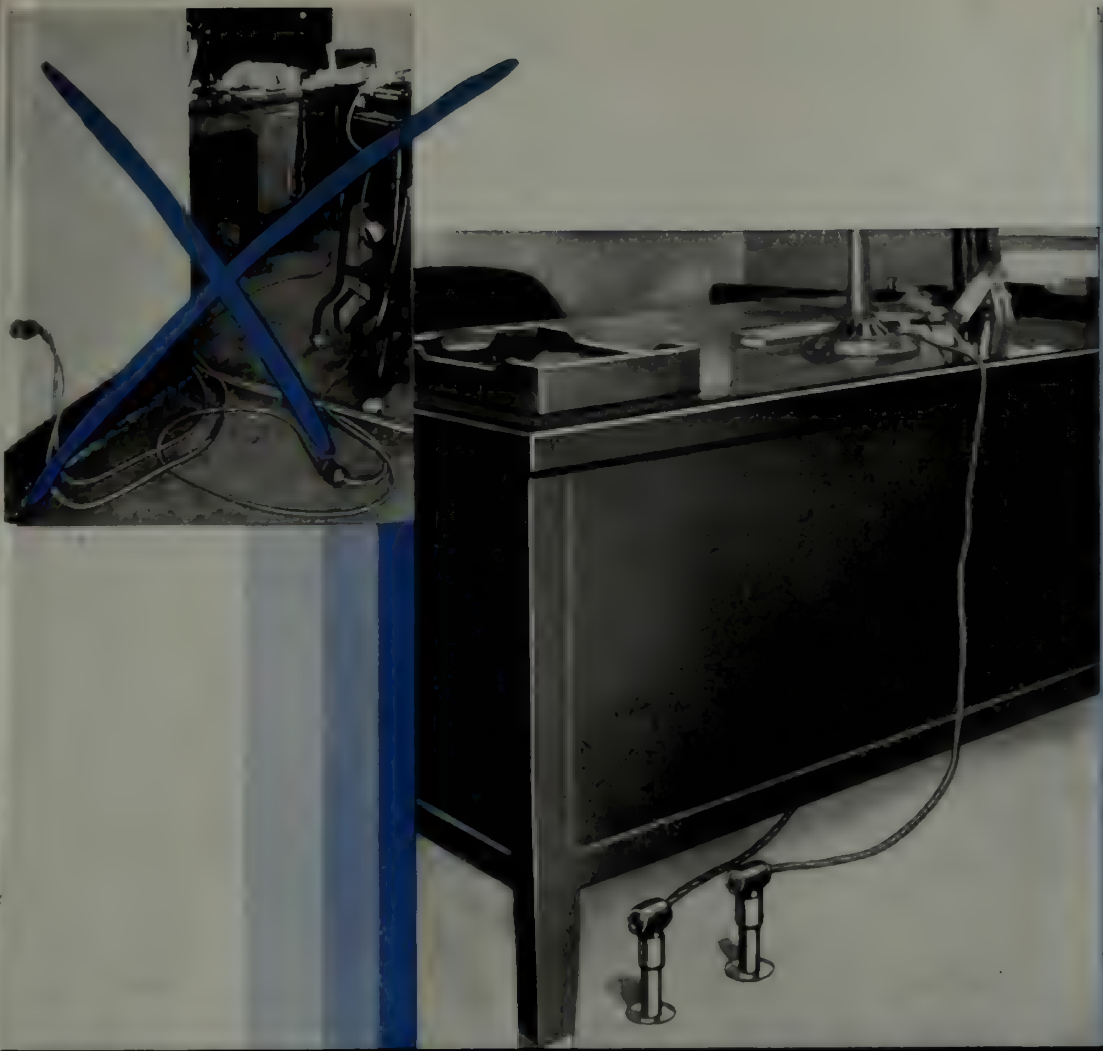
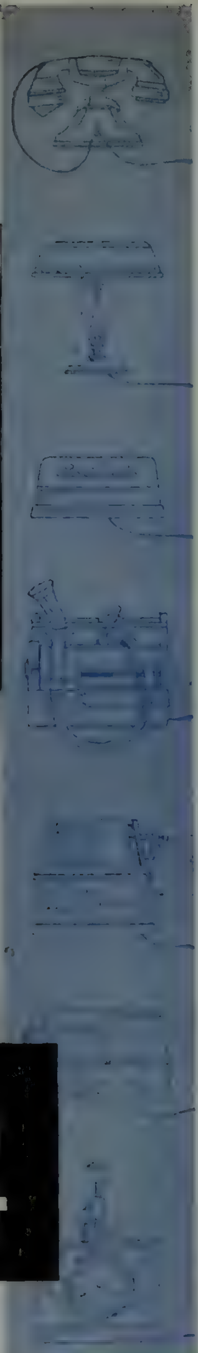
Quietfold · Standardfold · Pairfold





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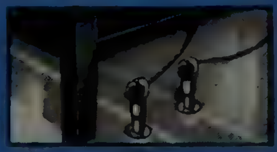

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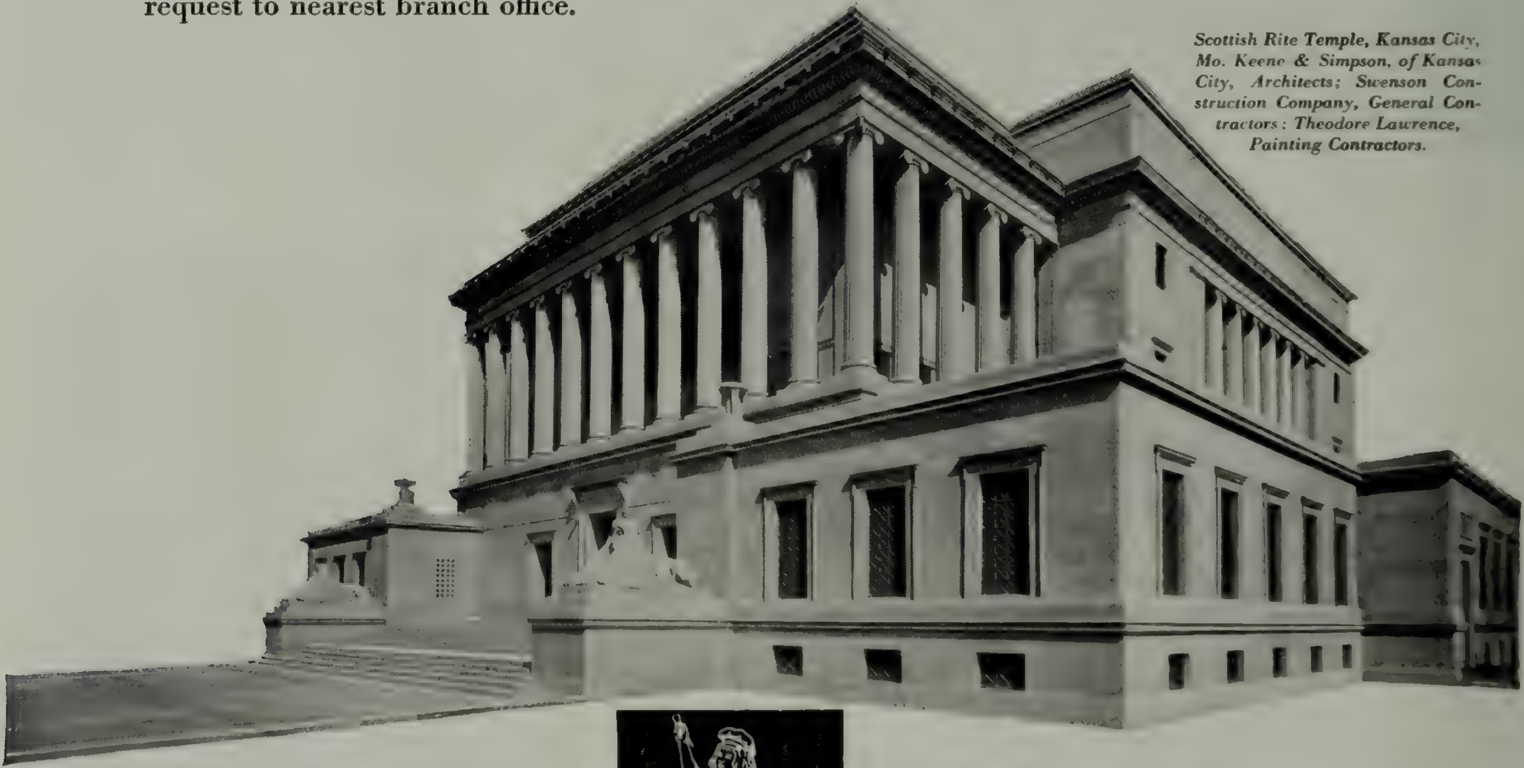
Consequently...it's significant that Dutch Boy White-Lead was the choice of those responsible for the painting of this building.

Paint made with Dutch Boy White-Lead and flatting oil has been used in hundreds of fine structures, because it makes a beautiful, long-wearing finish that's both washable and durable.

Moreover, paint made with Dutch Boy and flatting oil is adaptable—it can be tinted to any desired color. White-Lead is used for making every type of paint—paint for wood, plaster, wall board or metal...undercoatings for enamel...blended or mottled effects...and also for plastic paint that gives the low-relief textures now so popular for certain types of decoration.

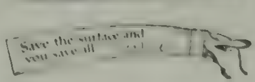
Have you a copy of the booklet—"Decorative Possibilities of Paint" in your files? If not, let us send you one. Send your request to nearest branch office.



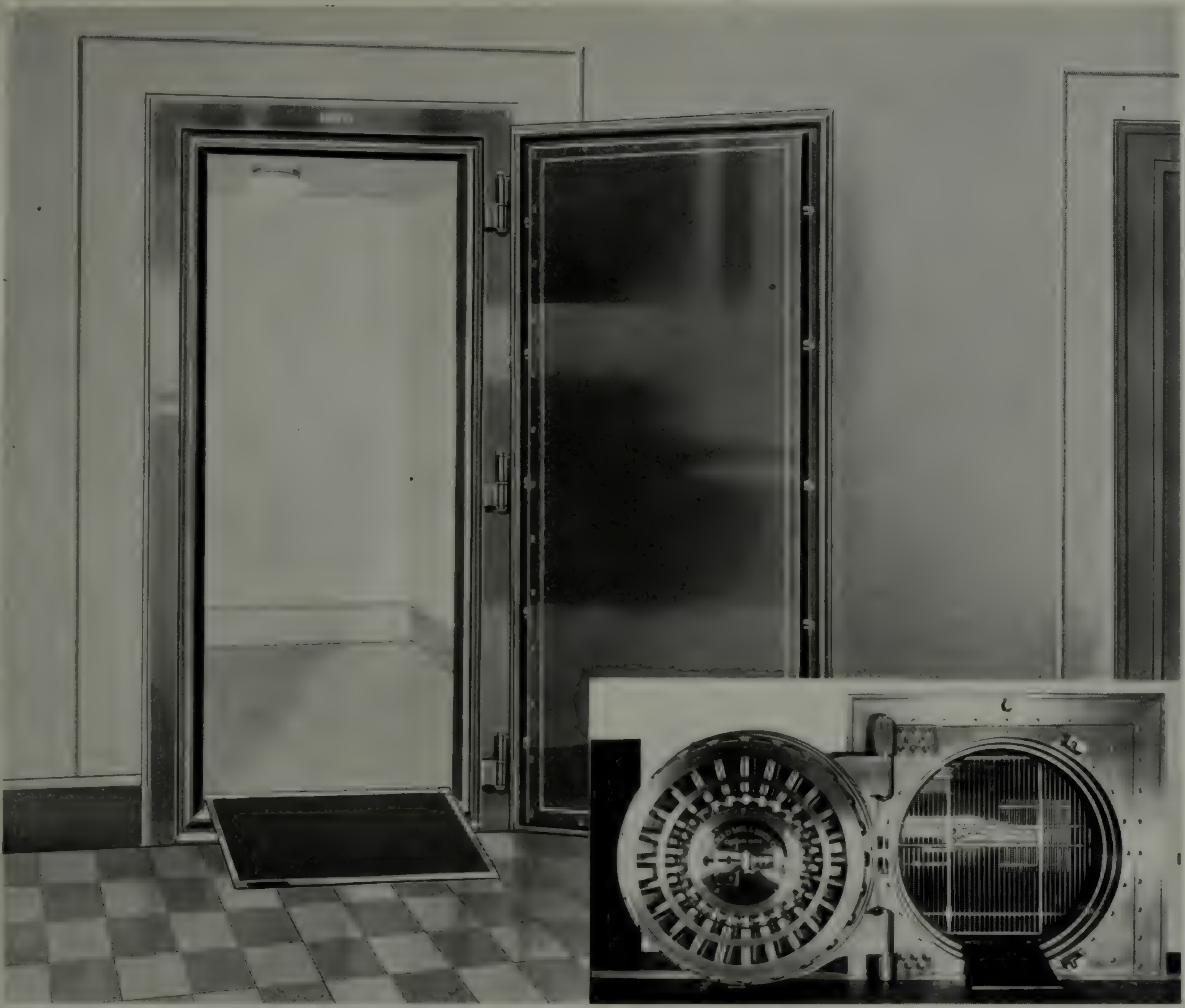
Scottish Rite Temple, Kansas City, Mo. Keene & Simpson, of Kansas City, Architects; Swenson Construction Company, General Contractors: Theodore Lawrence, Painting Contractors.

NATIONAL LEAD COMPANY

New York, 111 Broadway—Buffalo, 116 Oak Street—Chicago, 900 West 18th Street—Cincinnati, 659 Freeman Avenue—Cleveland, 820 West Superior Ave.—St. Louis, 722 Chestnut St.—San Francisco, 2240-24th St.—Boston, National-Boston Lead Co., 800 Albany Street—Pittsburgh, National Lead & Oil Co. of Pa., 316 Fourth Avenue—Philadelphia, John T. Lewis & Bros. Co., Widener Building.


Save the surface and you save all

The well-known brand of Carter White-Lead is also made by the National Lead Company. In purchasing either Carter or Dutch Boy White-Lead, the buyer is assured of obtaining white-lead of the highest quality.



EVEN INTO MODERN BUILDINGS FIRE CAN find its way. . .

MORE than $1000 a minute, every minute of the day, is lost in the United States through fire. ● For the protection of unreplaceable papers, fire-resistive vaults equipped with Diebold fire-resistive vault doors offer protection against the disorganization of a business through fire. The door illustrated provides a minimum of 6 hours' resistance to heat. ● In planning for particular businesses, keep the fire hazard in mind. There is a Diebold Vault Door to match the architecture of any building. ● Diebold engineers are always available for consultation. See Sweet's Architectural Catalogs for specifications and details. Diebold fire-resistive vault doors are made by the makers of the famous Diebold Bank Vaults and Vault Doors.

DIEBOLD **SAFE AND LOCK COMPANY . . . CANTON, OHIO**
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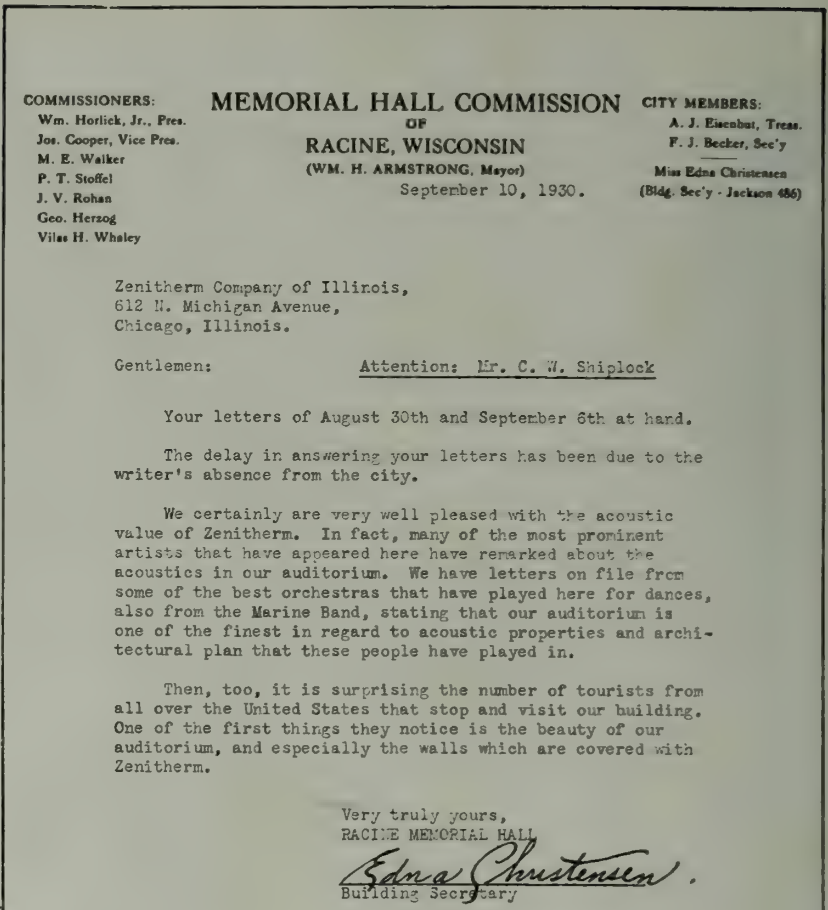
for Auditoriums

IN auditoriums, churches, theatres—wherever the dignity and beauty of marble would be appropriate—Zenitherm offers similar *decorative advantages* and *permanence* at a material saving.

Zenitherm is a fabricated material which closely resembles some fine Italian marble in appearance. It wears like stone . . . is practically indestructible . . . yet is *sawed, nailed* and *worked like wood.*

Zenitherm is quiet and comfortable underfoot—is warm to the touch—and possesses desirable acoustic properties. Zenitherm may be used *indoors* or *out.* Age and weathering only serve to toughen and harden this "man-made" marble.

See Zenitherm's 21 attractive color tones in Sweet's Catalogue B-3007-14, or write us for full information.



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(Bldg. Sec'y - Jackson 486)

September 10, 1930.

Zenitherm Company of Illinois,
612 N. Michigan Avenue,
Chicago, Illinois.

Gentlemen: Attention: Mr. C. W. Shiplock

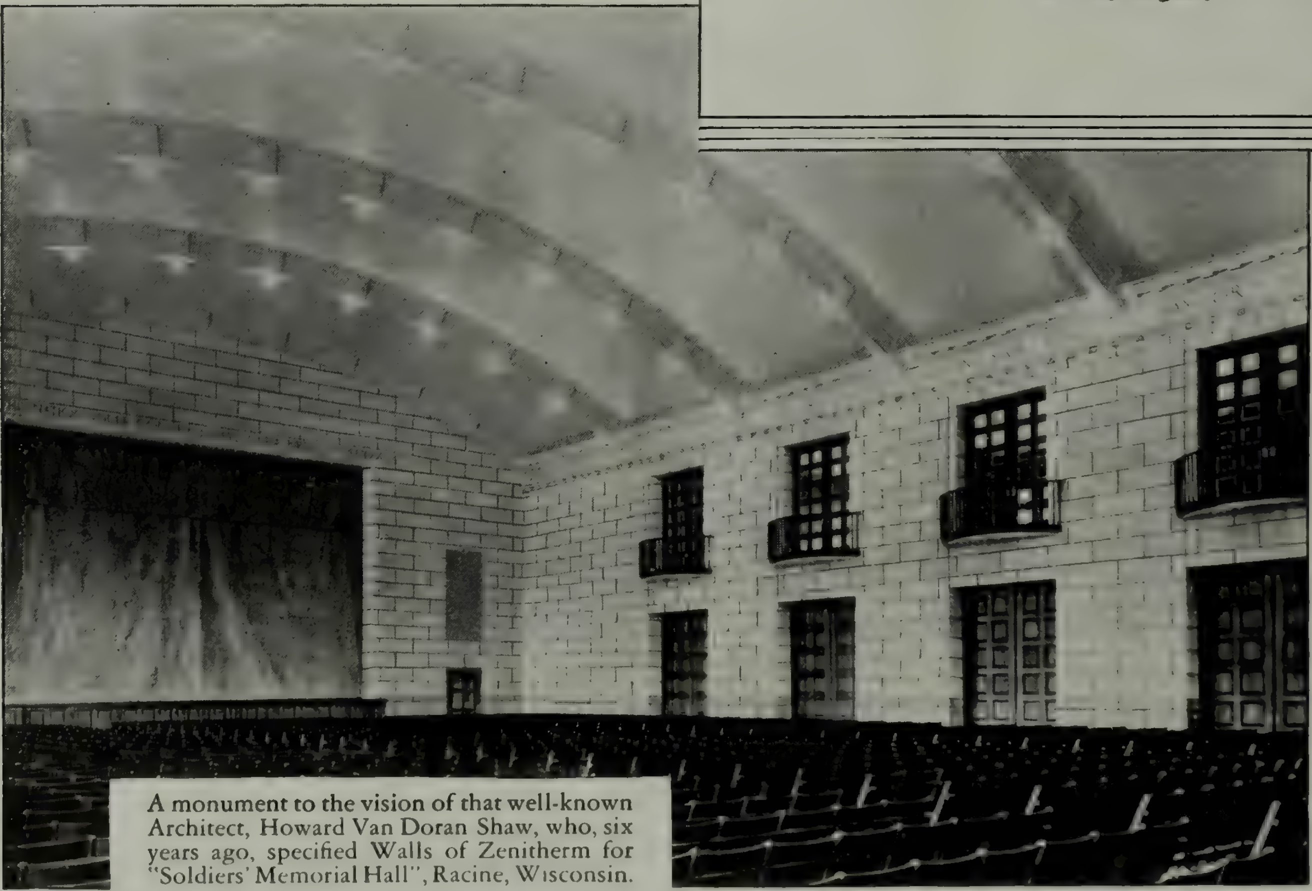
Your letters of August 30th and September 6th at hand.

The delay in answering your letters has been due to the writer's absence from the city.

We certainly are very well pleased with the acoustic value of Zenitherm. In fact, many of the most prominent artists that have appeared here have remarked about the acoustics in our auditorium. We have letters on file from some of the best orchestras that have played here for dances, also from the Marine Band, stating that our auditorium is one of the finest in regard to acoustic properties and architectural plan that these people have played in.

Then, too, it is surprising the number of tourists from all over the United States that stop and visit our building. One of the first things they notice is the beauty of our auditorium, and especially the walls which are covered with Zenitherm.

Very truly yours,
RACINE MEMORIAL HALL
Edna Christensen.
Building Secretary



A monument to the vision of that well-known Architect, Howard Van Doran Shaw, who, six years ago, specified Walls of Zenitherm for "Soldiers' Memorial Hall", Racine, Wisconsin.

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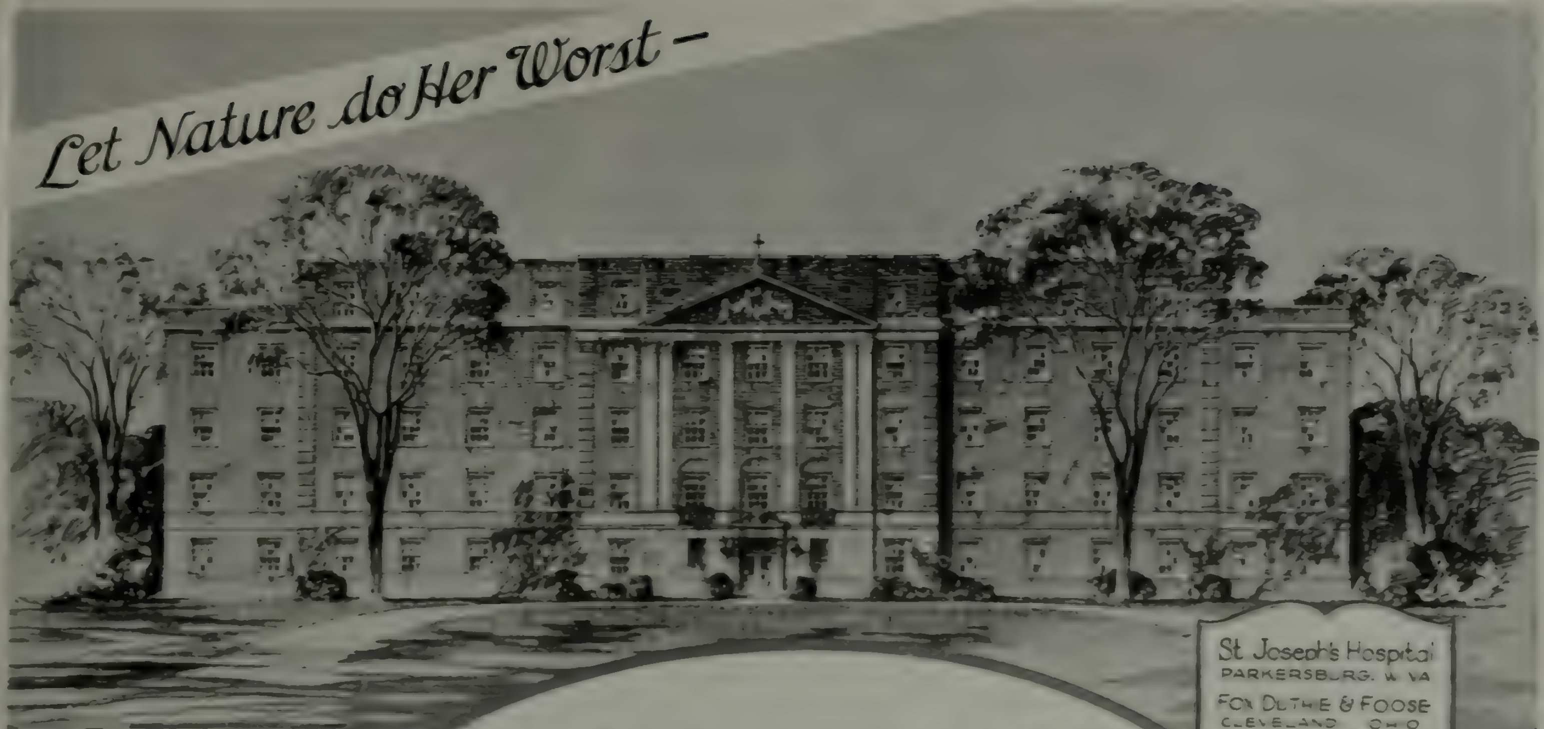

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The finest dampproofing obtainable protects the walls of this building

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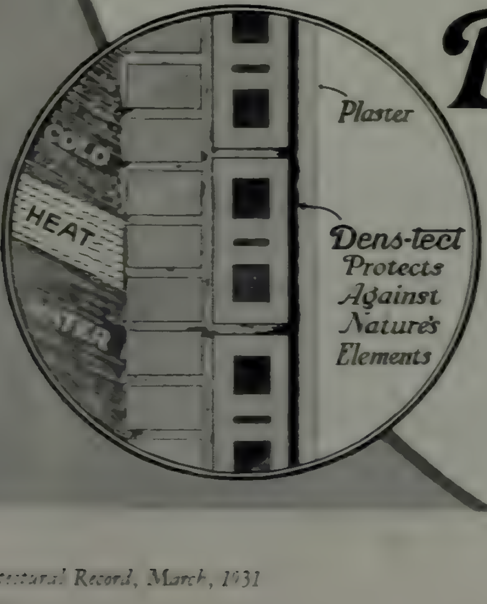
Dens-tect offers a thoroughly reliable key for plastering direct on sidewalls.

The nearest Par-Lock Applier will gladly give you full details for dampproofing the buildings you are now planning.



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The *Master* Plaster Key

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VENUS PENCILS

STUDY OF A TURRET—*drawn by* BERNHARDT E. MULLER, *Architect. In this rendering the following degrees of Venus Pencils were used—6B, 4B, 2B.*

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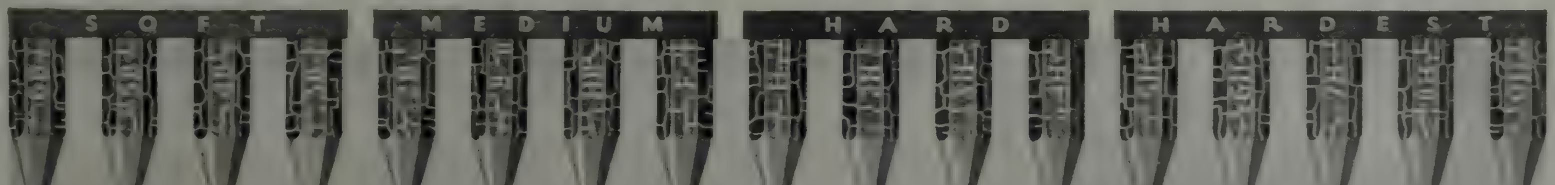

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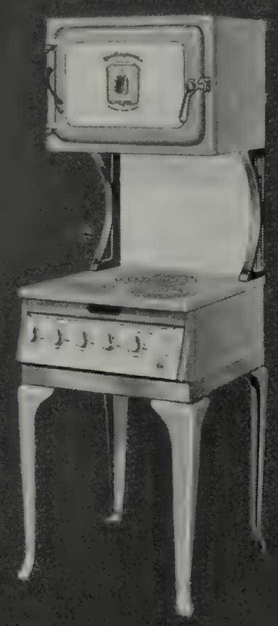
A Cement for Masonry and Stucco

A COMPLETE LINE OF RANGES *for the* MODERN SMALL APARTMENT

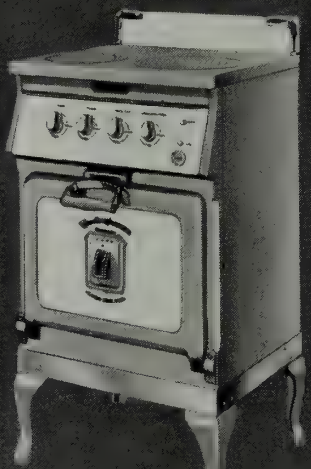


The high oven range has 3 platform units and a 16-inch oven. Floor space required: 20½" wide by 24½" deep. Height 62½".

The truly modern kitchen is the all-electric kitchen. To the man who designs such kitchens for the apartment houses of today, Westinghouse makes available a complete line of ranges . . . ranges that combine the desirable advantage of electric cooking with the compactness required by apartment house layouts.

In quality of workmanship, in appearance and in performance, these Flavor Zone electric ranges are worthy of a place in the finest apartments going up today. They are designed and finished to harmonize well with modern kitchen interiors, while their operation affords the convenience that is typical of present-day appointments.

Write for your copy of the Westinghouse Range catalog. It gives complete data and specifications, not only on the apartment ranges, but on Westinghouse ranges for homes of all types.



The 2-unit Low Oven Range is just 38½" high and takes a floor space 20½" wide by 21" deep.

WESTINGHOUSE ELECTRIC & MFG. CO.
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The D-431 Console Range, an extremely popular model. Occupies floor space only 38¼" wide by 27½" deep. Height 46¼".

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Flavor Zone Ranges

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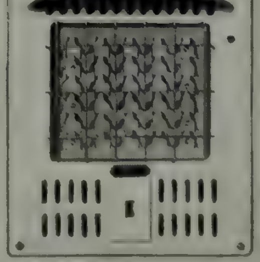
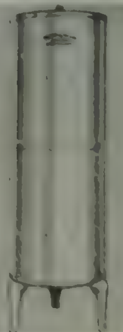
Exhaust Fans offer efficient means for removing odors from places requiring more than usual ventilation.

Solar Glow Heaters for rooms and bathrooms in two sizes, standard or special finishes.



Electric Water Heaters in tank, strap-on and immersion models.



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Ink marks, pencil scratches, dirt—stains of all kinds—can be quickly and easily removed from walls finished with Berry Brothers' Delitone. This remarkable material is many times more washable than ordinary finishes. We believe it the most economical and serviceable wall finish on the market. Two coats are sufficient for a perfect job on old or new work. It will positively stop lime burns or hot spots on plaster that is in proper condition for the application of a wall coating. As a prime coat Delitone covers upwards of 750 square feet per gallon. Learn more about this finish. Write for complete information.

"Save the surface and you save all" Paint & Varnish

Architectural department will furnish complete details

BERRY BROTHERS INC.

Varnishes Enamels Lacquers

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Manufacturer of wear-resisting architectural finishes

. . . for the doctors themselves

W. W. Orr Doctors Building at Atlanta, Georgia . . . LUSTRAGLASS clear sheet window glass was specified for all windows.

Architects, Pringle & Smith: Contractors, Southern Ferro Concrete Co.; Glaziers, F. J. Cooledge & Sons; Agents, Adams Cates.

LUSTRAGLASS
FLAT-DRAWN

In Atlanta, window glass was called for a "show down." There was to be no guess work in deciding what make to use in the W. W. Orr Doctors Building. Many brands were considered and considerable investigation was carried on regarding the merits of LUSTRAGLASS. The result was that owner, architect, builder and glazier all decided in favor of LUSTRAGLASS. The reasons for their selection were threefold. LUSTRAGLASS is the "whitest" of all glass made for windows . . . It transmits more daylight and more of the ultra-violet rays of sunlight, yet LUSTRAGLASS costs no more than any good window glass

It is easier to rent or sell a building glazed with LUSTRAGLASS. You will be interested in booklet A-430 giving further details regarding this wonderful new glass for windows. Write for it today.

AMERICAN · WINDOW · GLASS · CO.

Farmers Bank Building

Also makers of Armor-Lite Scatter-Proof and Bullet-Proof Glass, Tintaglass, Picture Glass, Photographic Dry Plate Glass, 3/16" and 7/32" Crystal Sheet, Ground and Chipped Glass, Improved Quartz-Lite and Bulb Edge Glass.

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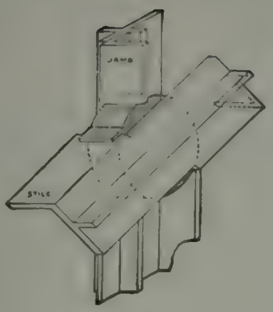

A triumph in pivot design

Here is sash that stays sound† Good friend to him who builds well† New† Different† Of genuine wrought iron† It stands alone in effective resistance to progressive corrosion† Brings new low upkeep in meeting railroad, seaboard, packing house and other special conditions† Write for bulletin PP†

WROUGHT IRON SASH

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APRIL 18TH—25TH
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AT GRAND CENTRAL PALACE
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Under the Auspices of

THE AMERICAN INSTITUTE OF ARCHITECTS
THE ARCHITECTURAL LEAGUE OF NEW YORK

With the endorsement of

THE SOCIETY OF BEAUX-ARTS ARCHITECTS
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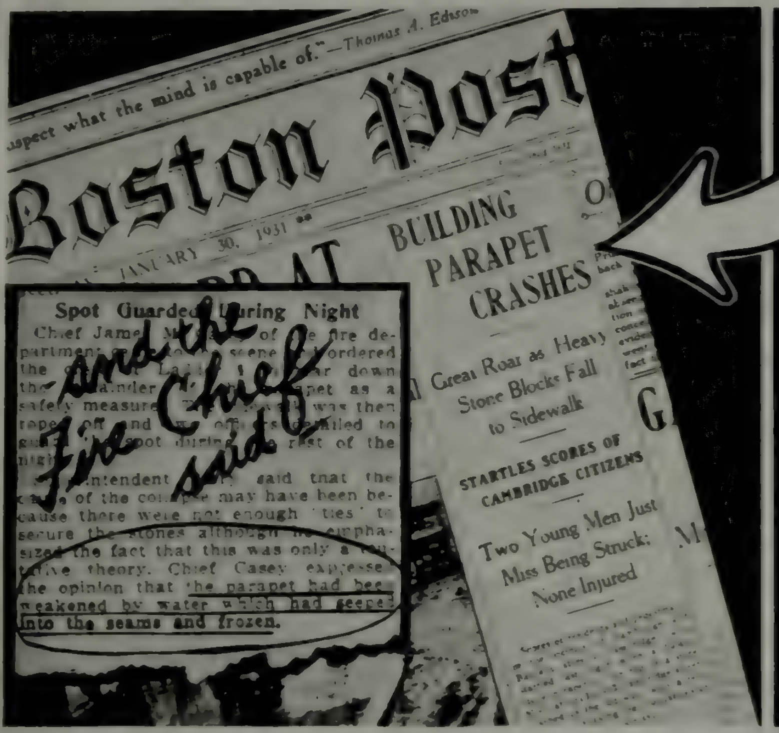
YES...PARAPET WALLS *DO* LEAK and FREEZE and *Crash!*



"...spect what the mind is capable of."—Thomas A. Edison

Boston Post

JANUARY 30, 1931

BUILDING PARAPET CRASHES

Great Roar as Heavy Stone Blocks Fall to Sidewalk

STARTLES SCORES OF CAMBRIDGE CITIZENS

Two Young Men Just Miss Being Struck: None Injured

Spot Guarded During Night

Chief James M[illegible] of [illegible] fire department [illegible] scene [illegible] ordered the [illegible] down the remainder [illegible] parapet as a safety measure. [illegible] was then roped off and [illegible] detailed to guard [illegible] spot during [illegible] rest of the night.

[illegible] intendent [illegible] said that the [illegible] of the collapse may have been because there were not enough "ties" to secure the stones although [illegible] emphasized the fact that this was only a tentative theory. Chief Casey expressed the opinion that the parapet had been weakened by water which had seeped into the seams and frozen.

—and the Fire Chief said

YET ~

such disasters can be prevented permanently and economically.

CHENEY

INTERLOCKING THRU-WALL FLASHING

Positively Prevents **Seepage ~ Leaks ~ Efflorescence**

THE INSTALLATION OF CHENEY FLASHING IN MASONRY WALLS ABSOLUTELY PRECLUDES THE POSSIBILITY OF DISASTERS SUCH AS ABOVE DESCRIBED.

Cheney Flashing is the only Ready-to-use Thru-Wall Copper-flashing on the market that runs entirely through the masonry wall and forms a positive unbreakable key-bond in every direction within the mortar bed.

It scientifically prevents seepage, leaks, efflorescence and rusting of steel spandrels and lintels and the DISINTEGRATION OF MASONRY WALLS.

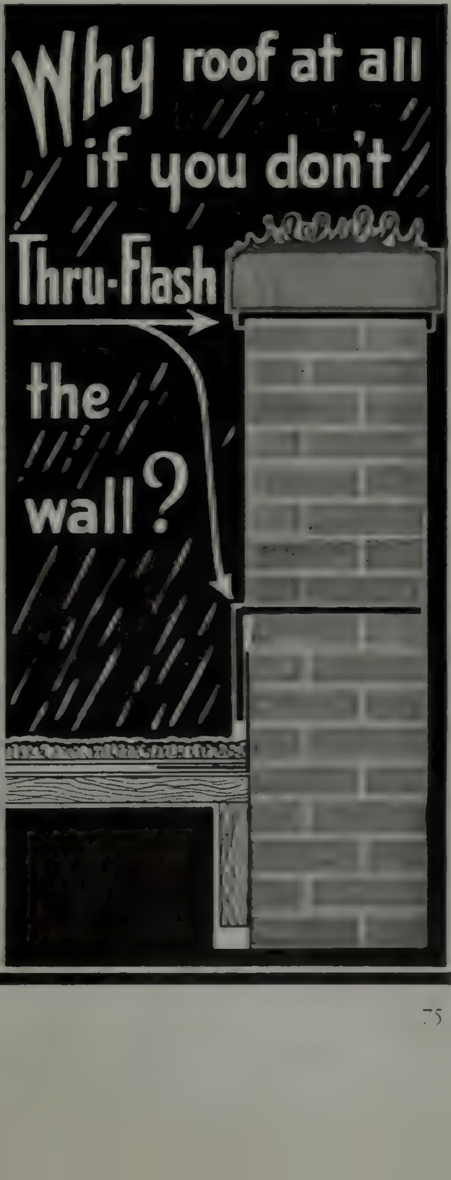
Cheney Flashing is made of 16-ounce copper—comes to the job ready-made to exact shape—to slip easily into the mortar bed as the masonry progresses, without cutting, soldering or loss of time; the ends hook together to form a continuous flashing.

Cheney Flashing has been adopted for standard installation by leading Architects, Engineers and Contractors as its use in outstanding building projects throughout the country will attest.

CHENEY SERVICE—Our engineers are generally available to assist in supervising installations and in detailing plans and specifications or plans may be forwarded to our offices for the purpose. There's no obligation.

Valuable information on the use of Cheney Flashing is contained in the New Cheney Catalog. Write for it today.

THE CHENEY COMPANY
961 MAIN STREET, WINCHESTER, MASSACHUSETTS
New York Philadelphia Pittsburgh Chicago



OBSOLETE!

before the first tenant moves in

Nobody concerned with a new building is likely to think of it as obsolete, yet it is obsolete when the heating service bothers the occupants and costs the owners extra money to operate.

Dunham Differential Heating is modern steam heating. It gives definite assurance of comfort and economy far in advance of what was acceptable only a short time ago.

Both these features of Differential System performance are amply demonstrated by over 1000 installations all across the country, in buildings of all types from the largest of office buildings to modest apartments.

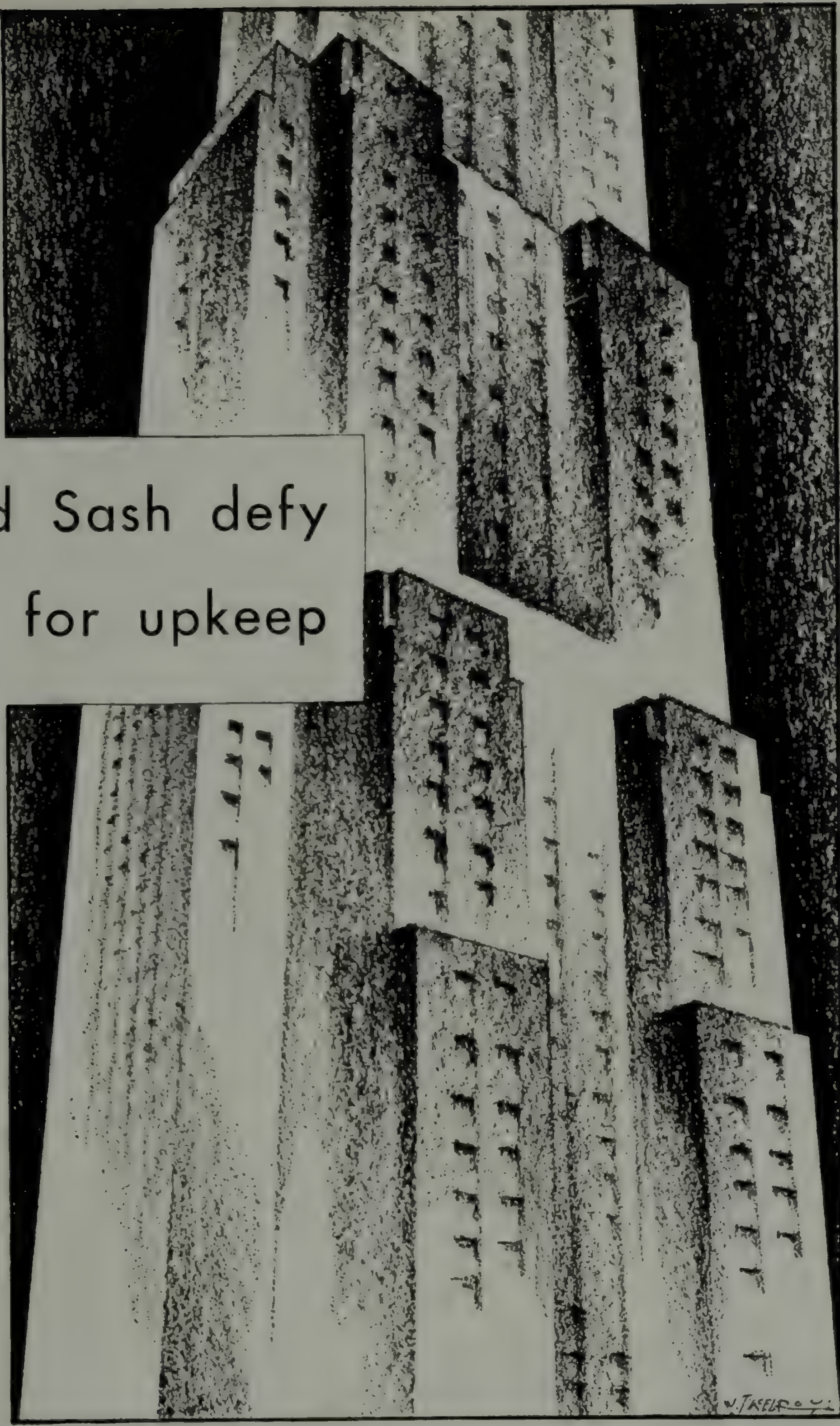
Examine the details of the exclusive Differential Vacuum Heating System principles and you will see why modern comfort standards are so easily maintained and fuel savings of 25 to 40% so certain. Ask for a copy of the new booklet "Modern Heating Standards."

Existing buildings can be modernized by the change-over of present heating system to Differential operation. The fuel savings pay for the installation.

C. A. DUNHAM CO.

450 E. Ohio Street **Chicago, Illinois**

1531



Alcoa Aluminum Window Frames and Sash defy time — cost nothing for upkeep

Window frames and sash that last a lifetime; that can not rust, warp or split—of metal—but only 1/3 the weight of old-fashioned metals.

As for upkeep, check that expense off the list and forget it. Unless you wish, you need not paint them; although Alcoa Aluminum window frames and sash take and hold paint well. Because aluminum resists corrosion, there is neither scale nor rust particle to "push off" the paint. These frames deposit no mineral salts to streak adjoining surfaces.

Light, tough, durable, Alcoa Aluminum window frames and sash are low in cost — lower than frame and sash made of other corrosion-resisting material.

Alcoa Aluminum double-hung windows, casement and factory sash are regularly made by most leading manufacturers. We will be glad to put you in touch with them. Address your inquiry to ALUMINUM COMPANY *of* AMERICA; 2467 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA
ALUMINUM

WINDOW FRAMES
AND SASH MADE OF

ALCOA ALUMINUM

WATERPROOFING DAMPPROOFING

—Avoid winter uncertainties by using

HEADLEY EMULSIFIED ASPHALTS

Applied cold without diluting or cutting, set readily, and bond securely to damp or cold surfaces. Not destroyed by freezing.

HEADLEY Emulsified Asphalts are as efficient and just as easy to apply *in Winter* as in Summer, for all types of waterproofing, dampproofing or other protective coating work. No difference exists in tenacity of the bond or uniformity of the finished coating.

The simple method of application as compared to hot asphalts and cut-backs means savings in material, time, and labor, with complete protection.

Headley Emulsified Asphalts give superior service in these applications

Dampproofing and waterproofing of foundations, basements, tunnels, reservoirs, sumps, pits, cisterns, vats, tanks, floors, walls, roofs, etc.

Protection of concrete and masonry against disintegration.

Protective coating of concrete, masonry, structural steel, pipe lines, metal, etc., against the destructive influences of fresh and salt water, moisture, gases, chemical fumes, brine, acids and alkalies, etc.

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Write for this BULLETIN and FREE SAMPLE

As largest exclusive manufacturers since 1908 of Emulsified Asphalts for industrial uses, we are prepared to offer authoritative advice, submit trustworthy tentative specifications, and co-operate in connection with ordinary, new or exceptional waterproofing and dampproofing applications. This service is free, and given promptly on request.

HEADLEY EMULSIFIED PRODUCTS COMPANY,
Franklin Trust Building, Philadelphia
Branch Offices: New York and Chicago

Please send Bulletin 330 and free sample of Headley Emulsified Asphalt.

Name and official position......................................

Name of Company......................................

Address ....
Ar.R.

No other steel casements do this . . .

OPEN
CLOSE
LOCK

THROUGH INSIDE SCREENS *without touching them* ❧ ❧

Ordinary windows have bothersome outside screens . .

FENESTRA Steel Casements are equipped with attractive metal framed, bronze mesh screens, attached or removed from the *inside*. These screens are put on or taken off in a jiffy, but it's easier to leave them in place the year round. They're almost invisible either from within or without.

Fenestra Screened Casements are COMPLETE windows, with frame, swing leaves, hardware and screen, all fitted, hinged, assembled and painted.

Permanent, non-warping, metal-to-metal contact between flat screen frame and flat window frame makes these windows fly-tight and insect-proof.

Locking handle attached to the frame and sill operator attached to the swing leaf both extend *through* the screen and obviate the necessity for leaning out.

Only the actual ventilating portion of the window is screened, thus saving considerable expense and leaving glass in side lights and fixed transoms clear.

Fenestra screening is by no means the only Fenestra advantage. Others are: more daylight, better control of ventilation, rolled steel members that do not warp or stick, outside washing from within, easy opening, weathertight closing, attractive hardware in either solid bronze or nickel silver.

And these better steel windows cost little if any more than ordinary windows.

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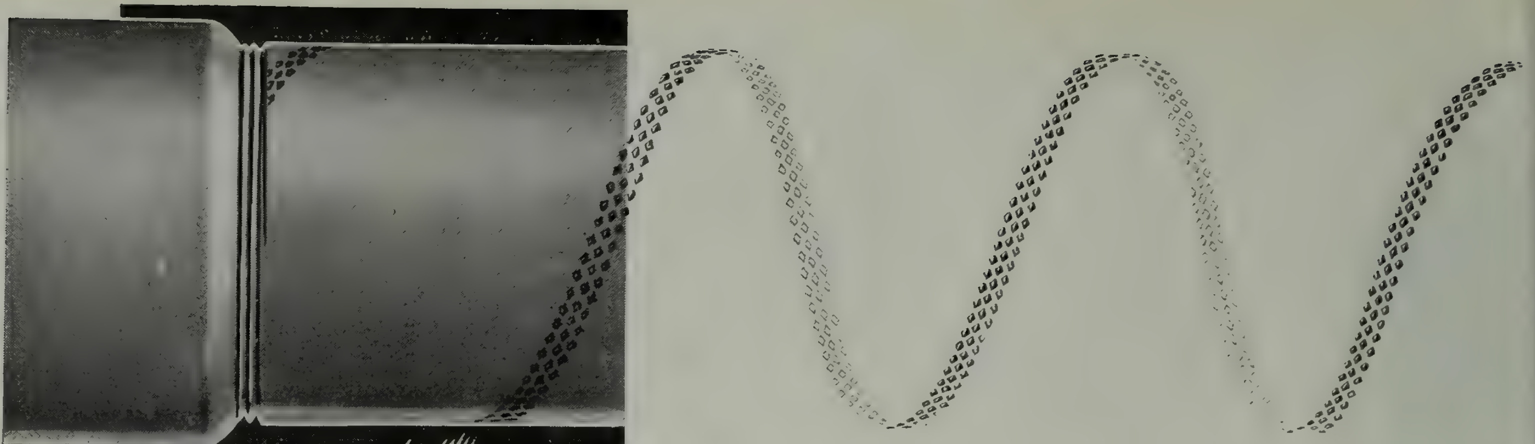
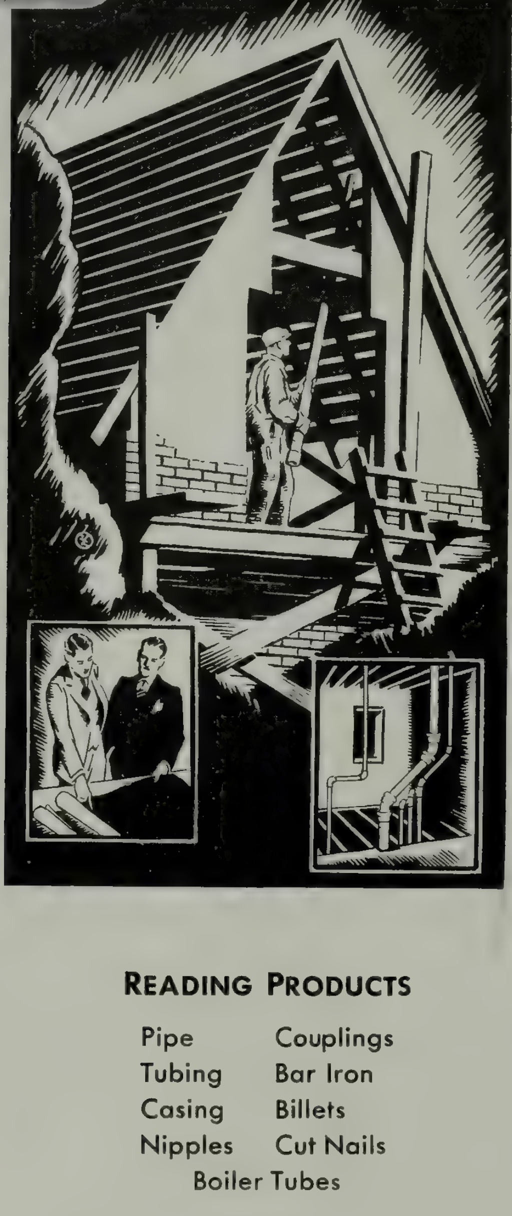
2285 East Grand Boulevard Detroit, Mich.
Factories at Detroit, Mich., and Oakland, Calif.

Fenestra

Complete Catalog of all Fenestra Products will be found in Volume A Sweet's Architectural Catalogs.

STEEL CASEMENTS SCREENED





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"I want clean, unfailing water and freedom from pipe repairs as long as possible at the lowest cost for which I can buy proved safety". Here, in a nutshell, is what your clients *expect* from the pipe that goes into their buildings.

And you can make sure that they *get* what they want by making all water lines, waste lines, vent lines and heating lines of Reading Genuine Puddled Wrought Iron —permanently identified by the *indented* spiral.

For the indented spiral guarantees that your clients are getting the same kind of pipe that has been giving unfaltering service in every part of the country for four generations—the same staunch pipe that has resisted rust, corrosion, electrolysis, vibration and fatigue as has no other. And remember, Reading 5-Point Pipe NEVER succumbs to swift, green corrosion, the fatal enemy of expensive pipe.

Specify Reading Pipe—make sure by the honest spiral that you get it—and then your clients can forget pipe until they build again.

For information and quotations address

READING IRON COMPANY
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For your protection this indented spiral forever marks all Reading Pipe.

READING PRODUCTS

- Pipe
- Tubing
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- Couplings
- Bar Iron
- Billets
- Cut Nails
- Boiler Tubes

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CALENDAR OF EVENTS AND COMPETITIONS

March 2-14	Annual architectural exhibition, Architects' Building, Los Angeles.
March 14	Programs for the A. W. Brown Traveling Scholarship will be issued, calling for delivery of drawings on April 13. Apply to William Dewey Foster, 25 West 45th Street, New York City.
March 16-18	Seventh annual meeting of the Concrete Reinforcing Steel Institute at Biloxi, Miss.
March 28-May 29	Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
March 30-April 4	House and Garden Exposition, Grand Central Palace, New York City.
April	Second International Congress and Exhibition of Sanitary Engineering and Municipal Hygiene, Milan, Italy. For information, apply to the Secretary General, Congress Internazionale di Tecnica Sanitaria e di Igiene Urbanistica, Milano, Piazza del Duomo 17.
April 2, 3	Preliminary examinations for the Rotch Traveling Scholarship.
April 3	Architectural students wishing to enter a competition for "the design of the most beautiful highway bridge in steel" are invited to submit to the American Institute of Steel Construction, 200 Madison Avenue, New York City, their preliminary sketches to be placed in judgment on this date.
April 7-May 2	Exhibition of Ideal Homes, London (Olympia).
April 13-15	Eighth annual meeting of Producers' Council, Inc., San Antonio, Texas.
April 14-16	Convention of American Institute of Architects, San Antonio, Texas.
April 18	Closing date for applications for Princeton Prizes in Architecture. Address the Director, School of Architecture, Princeton University, Princeton, N. J.
April 18-25	Fourth Biennial Architectural and Allied Arts Exposition, Grand Central Palace, New York City.
May	Exhibition of British Contemporary Art, London (Imperial Institute).
May 4-Aug. 8	Art Exhibition, Royal Academy, London (Burlington House).
May-August	Art Exhibition, Royal Scottish Academy, Edinburgh.
June 1-5	International Town Planning and Housing Federation Congress, Berlin.
July 10-Aug. 30	Vacation-study tour of housing, arranged and directed by The Garden Cities and Town Planning Association, London, in cooperation with the City Affairs Committee, 112 East 19th Street, New York City. For information, address Helen Alfred, Housing Chairman.
October 1	Closing date for entries for Lincoln Arc Welding Prize competition. Address inquiries to the Lincoln Electric Company. Cleveland, Ohio.
November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
October-December	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).

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ANNOUNCEMENTS

Klekamp and Whitmore, architects and engineers, announce removal of their offices to 188 West Randolph Street, Chicago, Illinois.

E. A. Ehmann, architect, announces removal of his office from the Realty Board Building to 173 East Flagler Street, Miami, Florida.

Stevens and Lee, architects and consultants, announce that George A. Curtin and Harold J. Smith have become full partners in the firm. Offices at 45 Newbury Street, Boston, and 62 Charles Street, East, Toronto.

Preis and Schwarz, architects, have opened an office at 108-04 Queens Boulevard, Forest Hills, N. Y.

Henry R. Parmley, architect and engineer, has opened an office at 526 Judge Building, Salt Lake City, Utah. Manufacturers' catalogs and samples are requested to complete files.

Sidney Weber, Jr., structural engineer, has moved his office to 615 Florida Street, Baton Rouge, La. He requests manufacturers' samples and literature.

Charles Smith and Sons, Inc., general contractors and builders, 101 Water Street, Derby, Conn., wish to announce that they have opened an office in the Hartford Connecticut Trust Company Building at 750 Main Street, Hartford, Conn.

THE APARTMENT HOUSE ISSUE

Three apartment house developments—all illustrated in this number—have been selected for awards by the New York Chapter of the American Institute of Architects.

The medal goes to the Grand Street Apartments, erected for the Amalgamated Clothing Workers, on the lower East Side of New York. Springsteen and Goldhammer are the architects.

Honorable mentions have been given to the Abbott Court Apartments at Radburn, N. J., designed by Andrew J. Thomas, architect, and to 1 Beekman Place, a cooperative apartment house designed by Sloan and Robertson, architects, with Corbett, Harrison and MacMurray as associates.

The awards were announced by Arthur C. Holden, chairman of the prize committee. Mr. Holden is the author of the article on apartment suites of one and more rooms which appears in this issue and which was prepared in cooperation with the apartment house exhibition of the New York Chapter.

Haight

PASADENA, CALIFORNIA
DONALD D. McMURRAY, ARCHITECT

Haight

SANTA BARBARA, CALIFORNIA
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HOUSES—THE APRIL ISSUE

REALTY DEVELOPMENTS . . . to whom do they belong? Certainly not to the builder nor to the realty company alone. In line with the movement among architects to develop business there should be a serious study of subdivision developments and leadership that would aid architects to achieve group building commissions. Arthur C. Holden, architect and member of the Committee on Town Planning of The American Institute of Architects, is author of an article which appears as the Technical News and Research subject. He points out the ways in which architects may initiate community plan developments with reference to achievements of architects who associated themselves with reputable realty promoters.

Accompanying this article will be a portfolio of plates illustrating community developments in representative parts of the country—California, Wisconsin, Ohio and New York. Architects in all cases have contributed to the success of these realty enterprises.

Winning designs in The Better Homes in America Architectural Competition will be published as another sequence of plates and plans. Other features of the issue will include a bank building by Eugene Schoen; a telephone building by Densmore, Le Clear and Robbins; the Punch and Judy Theatre in Chicago, remodeled by Eugene Fuhrer; 120 Wall Street by Ely Jacques Kahn; a study of "Plastics," describing such newly developed products as Pyralin, Bakelite, Celluloid and Lumarith; "Organization of the Architect's Office," by Parker Morse Hooper; and several other articles of current interest.

FOREST HILL DEVELOPMENT IN CLEVELAND
ANDREW J. THOMAS, ARCHITECT

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NORMANDY DEVELOPMENT IN BRONXVILLE, N. Y.
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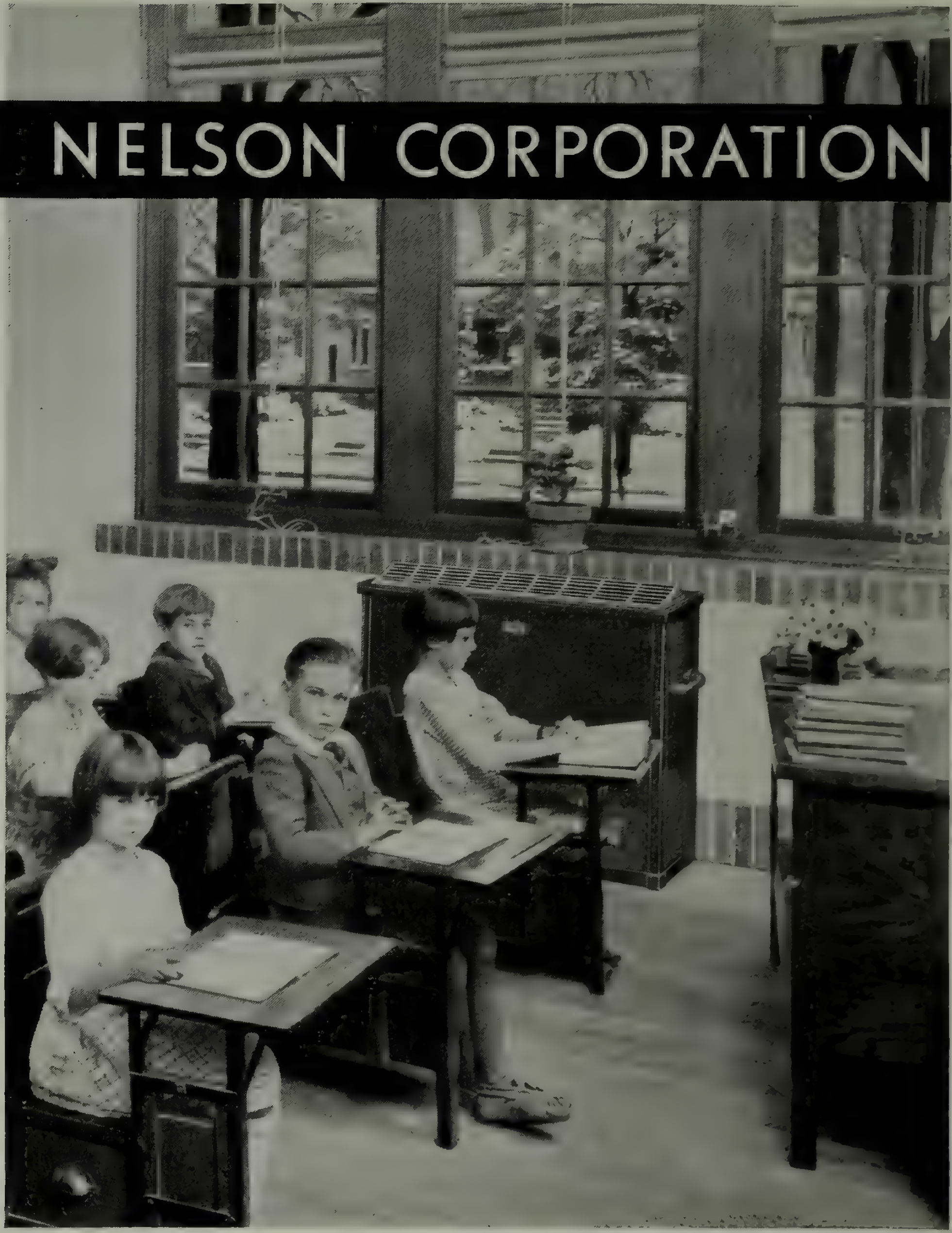

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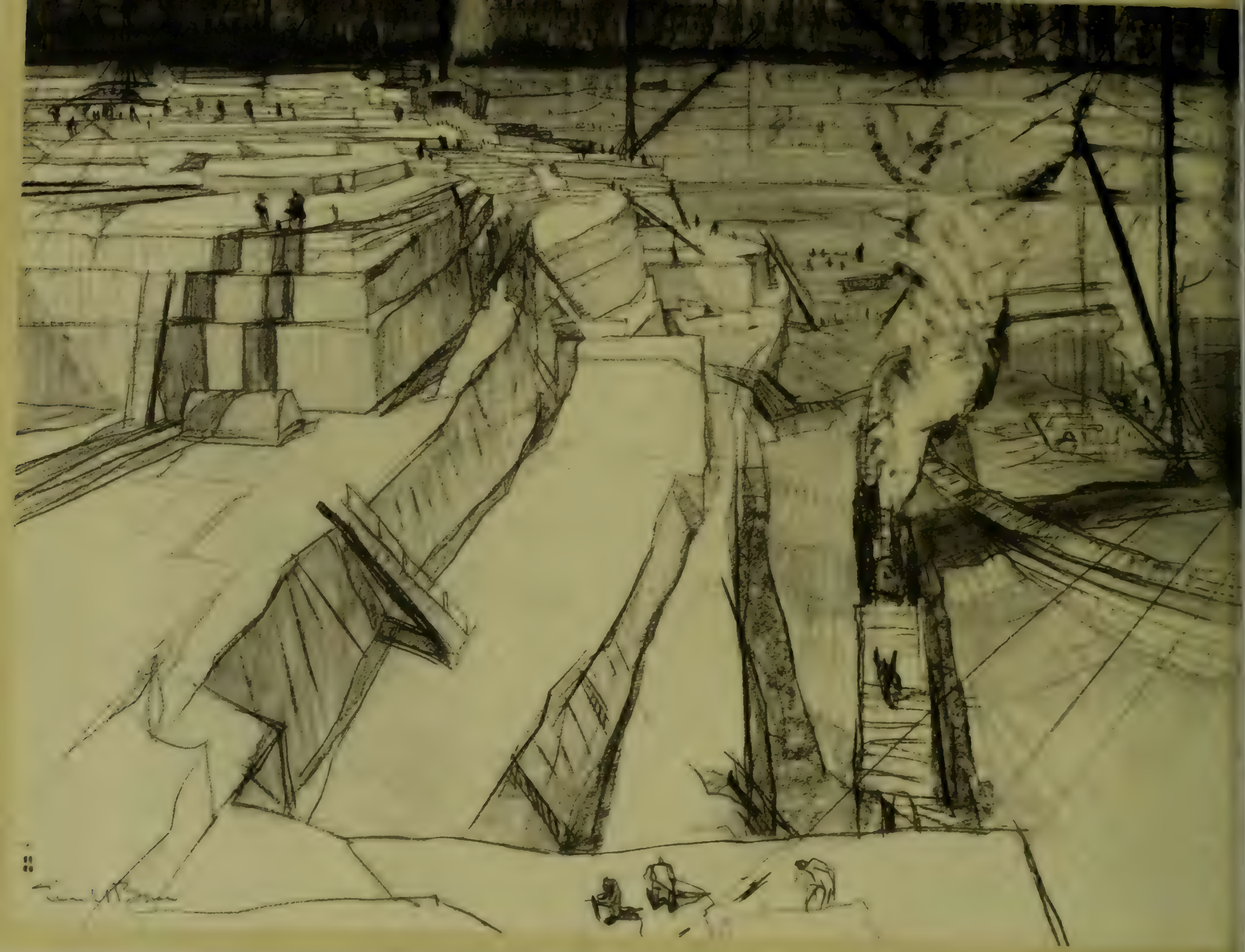

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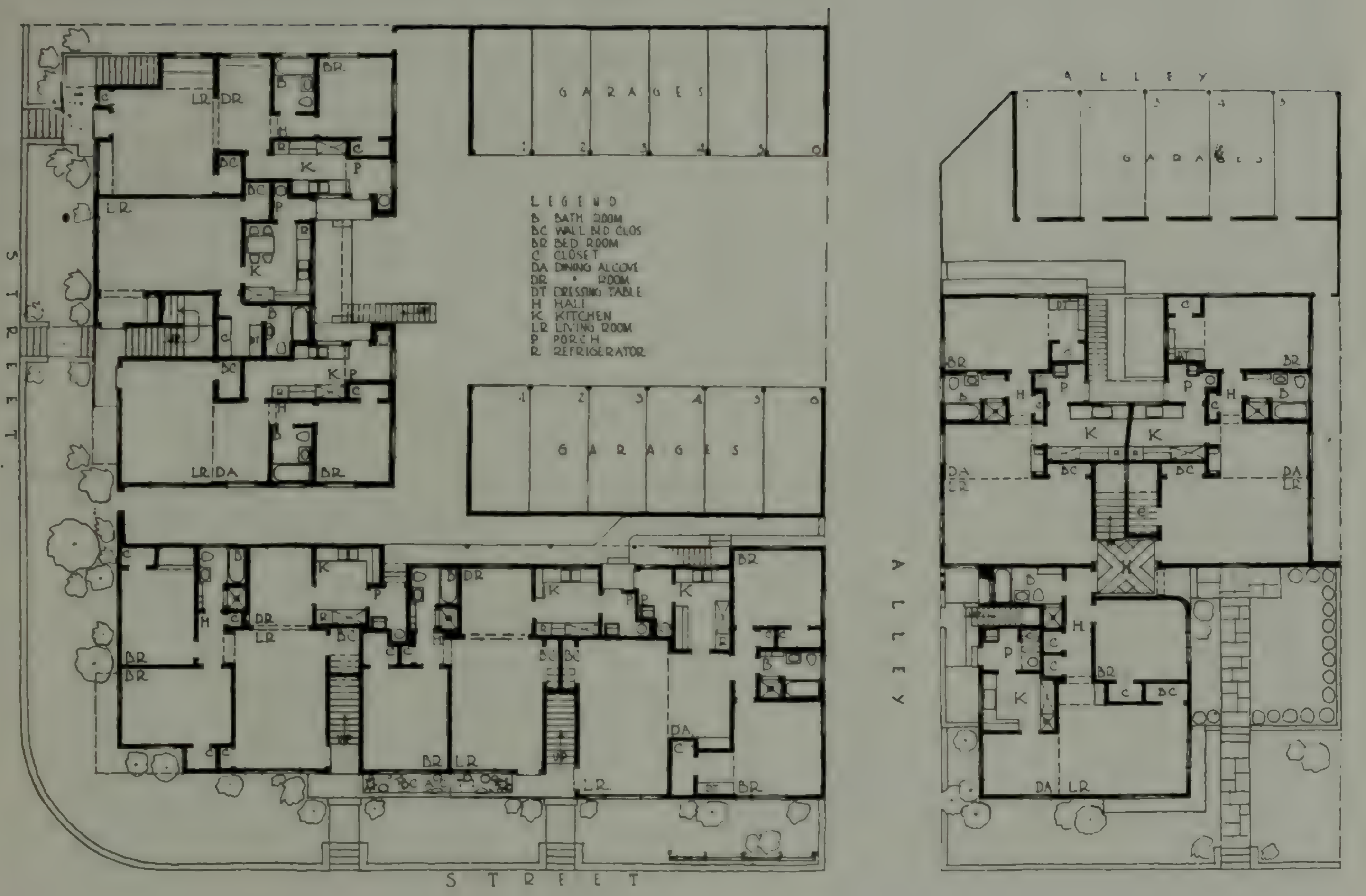
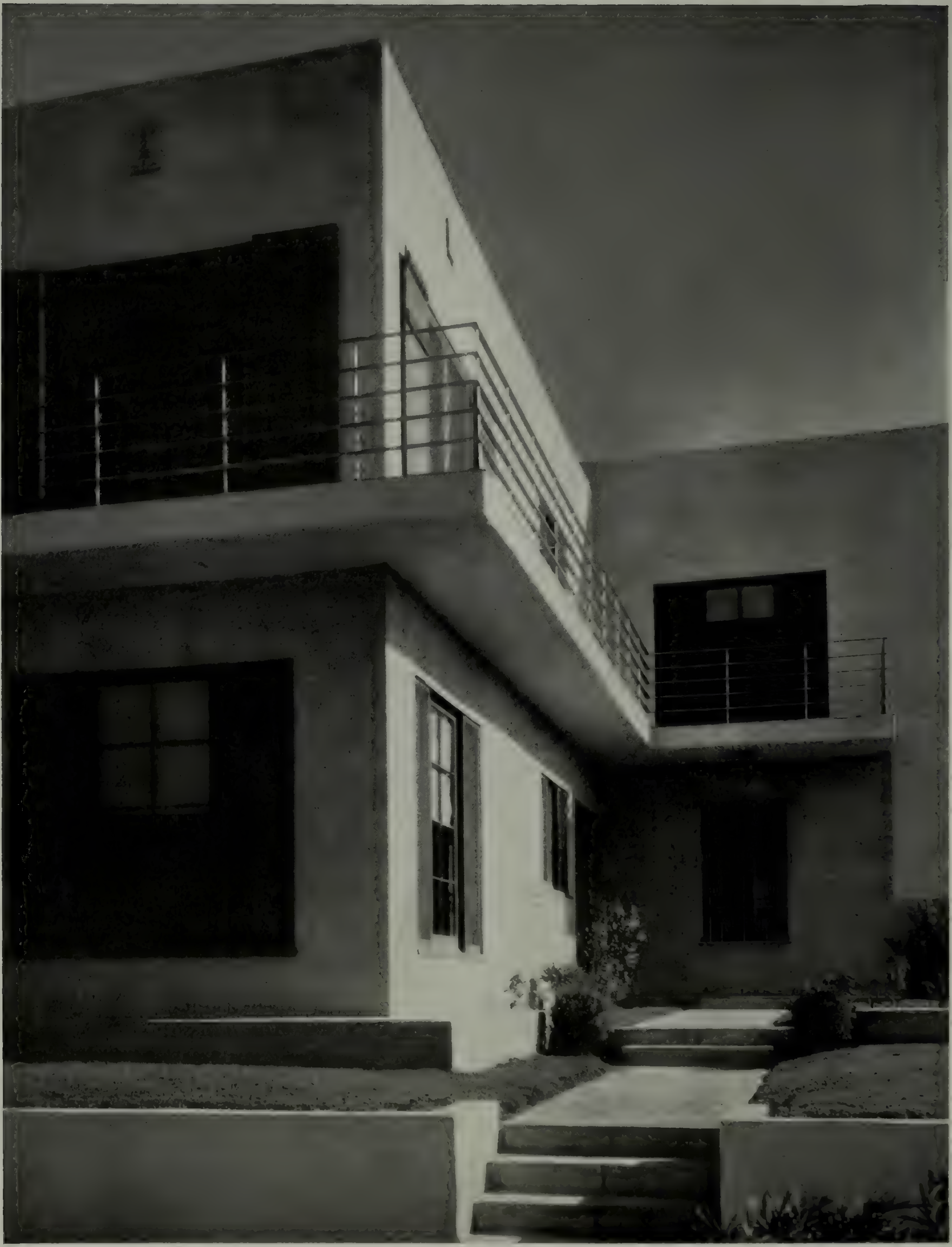


BAXTER APARTMENTS, LOS ANGELES
FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



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(See plan on other side)

THE ARCHITECTURAL RECORD
AN ILLUSTRATED MONTHLY MAGAZINE
OF ARCHITECTURE

VOLUME 69 MARCH · 1931 NUMBER 3

THE APARTMENT HOUSE
A Review and A Forecast

By HENRY WRIGHT, ARCHITECT

THE YEAR

Quantitatively: Despite the falling off in the building industry generally, fairly large additions to space accommodations in many cities, though in the aggregate only about 60% of previous recent years, are to be observed.

Qualitatively: The structures are substantial and highly mechanized; the average individual unit is of increased size. Few important additions to the basic principles of design are apparent. There is less evidence than in previous years of experimental trends in fitting the apartment to a wider field of usefulness and adaptability.

New York: The average unit has been increased in frontage width, assuming a more or less stereotyped facade of large windows vertically aligned. Efficient planning in relation to stair and elevator spaces is observable. Upper setback stories and penthouse towers show a variable handling. While plainly accepting the necessity for crowding each foot of valuable land to the limit, the form of individual design in New York does express, however, an expectation that the adjacent gaps are soon to be filled in with equally imposing units.

Chicago: Not so the typical Chicago high-class apartment, towering above its humble jumbled surroundings; its rigid bulk rises in full confidence that it is destined to remain permanently the *only* important edifice in its chosen block or district. We might well wish this could be the case.

Boston: A city in which the available supply of well-situated land is scarcely more adequate than in Manhattan, yet permits a conservative introduction of the elevator structure at heights scarcely double those of the surrounding older dwellings of Beacon Hill. For this we may thank the restraints of more adequate zoning rather than less urgent demands of the land owner.

California: Again this region contributes the most promising and almost the only examples of new design in which the efforts of the architect have been permitted to function without the handicaps of exaggerated land values.

Economically: There has been no more impressive example of the crude workings of the law of supply and demand than in the huge structures recently completed and now bidding for the practically non-existent patronage of a high-class clientele. Smaller projects could be and were promptly curtailed following the previously dangerous overproduction and the collapse of the stock market, but monster enterprises, requiring longer time both to promote and to complete, carried over the momentum of the building boom to a period when the market had entirely disappeared.

THE OUTLOOK:

For a forecast of the apartment house trend, the following facts must be taken into consideration:

1. The demand and the solution will be founded on an analysis of needs. In the past, just why two or three room apartments constituted the only "sure-fire" rental space was of far less importance than the problem of meeting "the demand" most expediently. These intuitive methods will be replaced by a closer study of changes in the social and economic factors.

2. We have before us a liquidation of the artificial rise in land prices, just as we have had to liquidate overproduction in other fields where in the zeal of the first years of acceleration we overran or discounted the building needs of the future.

3. The effect of the general rise in realty values has been augmented by the failure of those agencies opening new areas and new avenues of traffic, even under the influence of accepted principles of city planning, to provide adequately and specifically for the apartments.

4. A resumption of building to meet the unquestioned demand for more completely serviced city dwellings cannot be postponed indefinitely.

BASIC CONSIDERATIONS

Land costs in proportion to population density: Present practice accepts standards of land crowding which are entirely indefensible either for needs or for good business sense. While zoning restrictions for smaller cities have included areas permitting 60 to 140 families per acre on small plots, the ordinary allotment is 4 to 8 per acre, for medium-size single detached dwellings and 12 to 15 per acre for smallest houses. The apartment in larger units, on a basis of about 10 to 15 families per acre for each floor of the apartment, may be most generously designed with adequate open space, in provisions for light and air equivalent or superior to the small house on lot sizes as indicated above. In the two groups of suburban apartments at Radburn, N. J., designed by A. J. Thomas, 92 families are housed with generous provision of open space on a plot of 2.75 acres. The buildings average 3 stories in height, with 31 families per floor. This is less than 12 families per floor per acre, whereas the neighboring houses average about 9 per acre of net land within the block.

GROUP OF 2-, 3- AND 4-STORY APARTMENTS AT RADBURN, N. J.
ANDREW J. THOMAS, ARCHITECT

Under city conditions, as at Sunnyside, L. I., we have examples of 4-story buildings with courts 90 to 120 feet wide and 18 to 20 apartments per floor on plots of 1.25 and 1.5 acres respectively (including one half the adjoining wide streets). In the larger model housing projects of the Amalgamated Clothing Workers and others in New York, or the Marshall Field and Michigan Boulevard Gardens in Chicago, with coverage of 40% to 45% of the site, densities range from 20 to 25 families per floor per net acre. Room sizes average slightly more than 200 sq. ft. gross, and the immense central courts contain from 1 to 2 acres of open space in each case.

Limits of land cost: Residential land becomes prohibitive for use for single houses or even 2-story flats at about $125 per front foot, which is $6250 for a 50-foot lot 125 feet deep, or nearly $40,000 per gross acre. A 3½-story high-class apartment with 12 families per acre per floor and generous open space would require a land investment of only $1000 per family on this land at the limit of cost for small dwelling use. But in the past, land allocated to apartment use has been forced to take up price inflations of 200 to 300 per cent.

Moderate-priced non-elevator apartments should cost approximately $1100 to $1400 per room of 200 to 225 sq. ft. gross area, for building, and may consistently carry a land cost of $300 to $450 per room in commercial practice. Model apartments under non-commercial financing have been held to somewhat lower land costs. These costs should include the variable factors of site development and carrying charges during the building period. We may set up the two extremes as follows:

1. $300 per room, 4 stories high, rooms 200 sq. ft. gross, 40% cover, for urban areas.

2. $450 per room, 3 stories high, rooms 225 sq. ft. gross, 30% cover, for suburban areas.

This permits land charges per sq. ft. net of $2.40 under the city condition and $1.80 for the suburban condition.

The ordinary lot might be produced equally well for apartments as for houses. At $125 per front foot, 125 feet deep, we have only $1.00 per sq. ft. as the maximum price for normal single-family and small flat dwelling use. We would then have a leeway as between $1.00 and $1.80, or an 80% increase, for site development, more adequate public improvements, and provisions for common park and recreational space, and still permit the assumed allowance of $450 per room for moderate-price apartments of generous size, 30% land cover and averaging only 3 stories in height. There would be a 140% increase for 4-story, 40% cover model apartments.

Is there land enough in city and suburban territory to permit satisfactory space for apartment uses? We must turn back to *The Record* of March 1928 and 1929, and similar data and illustrations, to find a point of departure for the study of the development of apartments adaptable to reasonable land costs. Here we noted the beginnings of new forms of grouped dwellings either in large-scale unified projects for a high class suburban clientele or in low-priced model tenements in city areas. The examination of any city will reveal vast areas of now worthless blighted interior districts excellently adapted to convenient and comfortable living if or when the plots may be reassembled and replanned on a moderately large scale. This problem is coming forcibly to the attention of city councils, bankers and others, as the shrinkage of artificial values reveals the precarious basis of present tax returns.

As to suburban sites, the present situation is bringing to light no end of good land at sacrifice prices which are likely to assume more than temporary significance. From the architect's standpoint the problem involves more than mere service in building design, although the possibilities of improvement in design under freer site conditions should stimulate his utmost efforts. A suggestion of the problems and opportunities in this direction is found in the way Mr. Thomas has contrived to bring interest and domestic quality into his Radburn apartments by the juxtaposition of different groupings of stories and the organization of roofs and entranceways. The apartments, like the adjoining single-family houses, have access to the interior block park space.

Why should not the architect have the ability as well as the fundamental knowledge to lead in coordinating the larger elements of the problems of reclamation and readjustment? To determine the form and design of the community rather than the single development of the individual holding is the larger problem of the moment, and one in which the evolution of new and better forms of group habitation should become a major factor.

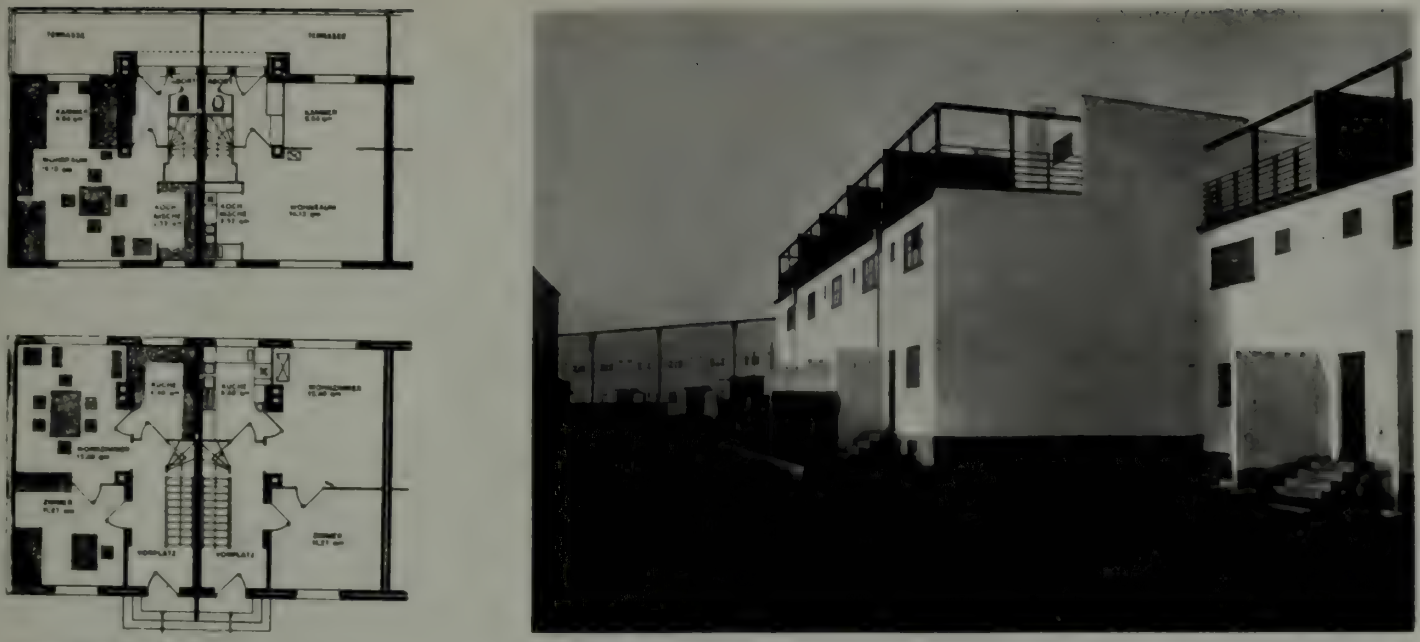
Neglected possibilities in grouped-dwellings: In any discussion of the merits and possibilities of the grouped-dwelling as against those of the apartment house, we are handicapped by a prevailing vagueness as to the exact borderline between these two types. It is generally understood that a project falls into one category or the other largely on the basis of whether services are furnished by the tenant himself or by a central management; hand-in-glove with this distinction goes the assumption that any large-scale development of three stories or more partakes of apartment status. But if we examine briefly the implications of a few of the developments in planning, construction and mechanical service, we find ourselves acknowledging a vastly larger and practically unexplored realm for the development of the grouped-dwelling.

The most distinctive service performed by the smaller types of apartment in the past has been the provision of central heat. Two- or three-story buildings of almost identical form may be classed as apartments or as flats on the basis of whether or not heat is furnished. Many fundamental problems of large apartments concern service in heat and hot water. The size of an efficient apartment group may depend more largely on this factor than on any other. Yet this problem of heat may become a less determining factor in the future than in the past. Heat is logically a utility to be furnished on a community basis. It would then apply alike to the house or to the apartment. The presence of individually operated coal or even oil-burning heating plants in houses is a mark of arrested technical advance which should shortly give way to more efficient forms of distribution on a community basis.

With central or individually automatic heating service placing the grouped-dwelling on a parity with the apartment, the next distinction in dwelling types will be found in the matter of interior janitor services. The first advantage of the grouped-dwelling over the detached house is a better use of ground space. Moreover, in lower forms, available for use in groups of a maximum height of 2 stories to the living floor, it is possible to retain two important advantages of the detached house: first, to provide ready access to individual outdoor garden or roof space for every family unit; and, second, to eliminate all internal halls and stairs which must be used in common.

All forms of dwelling accessible through their own individual doorways to the outside public approach should be classed together as differing in fundamental principle from those forms accessible only by interior common space.

STREET AND GARDEN VIEWS OF 8-FAMILY APARTMENTS AT RADBURN, N. J.
CLARENCE S. STEIN, ARCHITECT



Courtesy of Das Neue Frankfurt

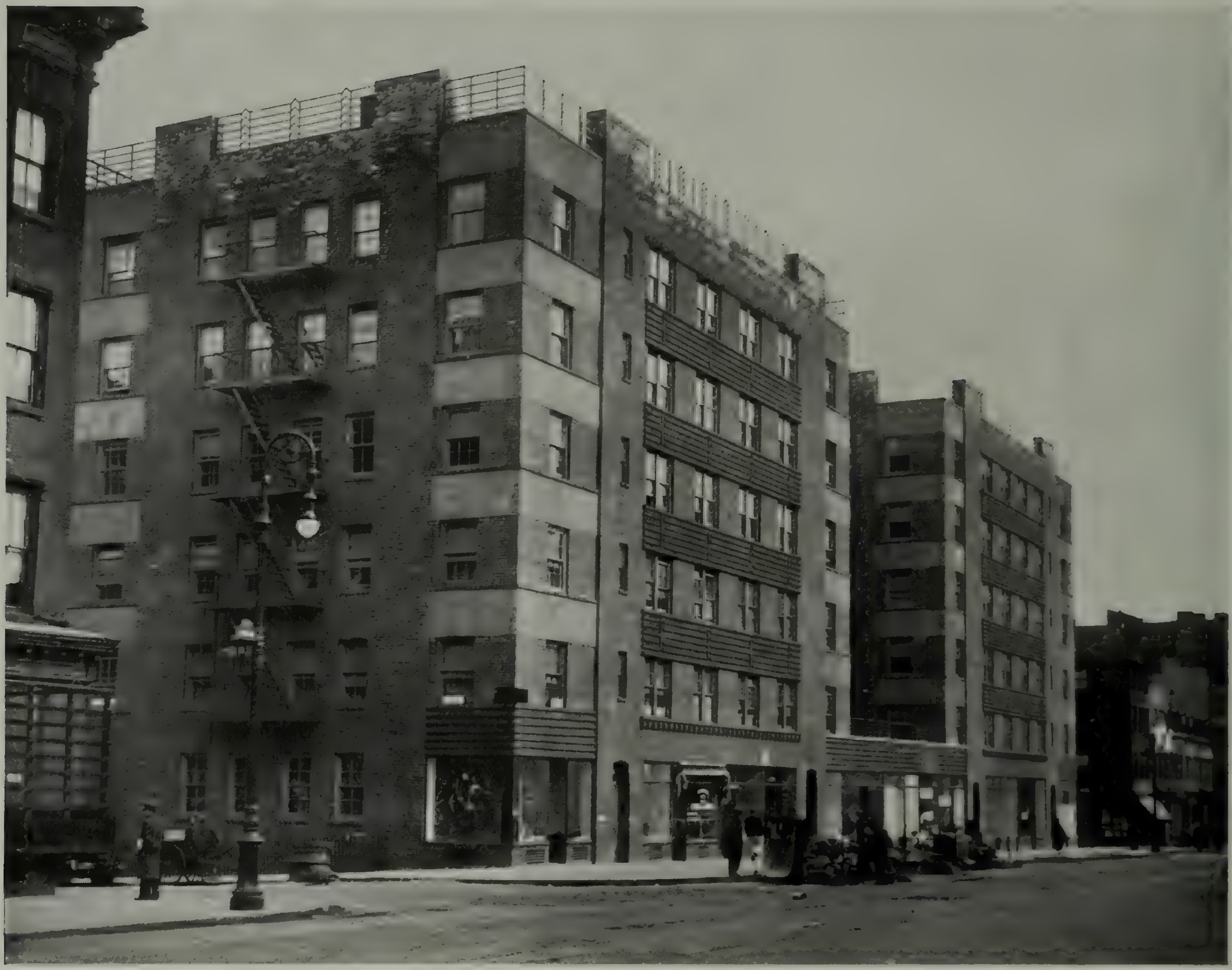
Single-family row houses at Frankfort with the third floor arranged as a small kitchenette apartment (which can be sublet) with roof terrace facing interior garden court.

ERNST MAY AND E. KAUFMANN, ASSOCIATED ARCHITECTS

Recent English housing developments have been marked by experiments in grouping flats and 2-story dwellings in the same building, thus adding another story to the space accessible by the individual stairway. That is to say, the space ordinarily occupied by identical flats on three stories with common stairs would be arranged as one flat on the ground floor with two 2-story dwellings above, each having its individual ground-floor entrance. This principle has been generally applied in England to the upper four floors of 5-story buildings by employing a central unenclosed stair and outside balcony access to the living floors of the two upper tiers of dwellings at the second and fourth stories. Germany has built thousands of otherwise-single-family row houses with "penthouse" apartments for each house. One half to two thirds of the third floor space is arranged as a small kitchenette apartment with open-air roof space facing toward the interior garden court of the block.

Thus we may have grouped-dwellings in buildings three stories high where individual services and access may be provided on the basis of community heat, individual automatic water-heating, mechanical refrigeration, incinerator shafts and internal private stairways, leaving no common services except yard work and repairs. Such buildings, without certain additional service features, should not be classed as "horizontal" apartments. Equally intriguing problems, however, are presented in the design and arrangement of horizontally grouped few-storied dwellings, adaptable as alternatives for the completely detached individual house. The possibilities of architectural interest on sites with varying topography are almost unlimited.

We have seen that the transition from dwelling to apartment does not come necessarily where we have tended to accept it—with an increase from two floors to three or more—and that the privacy of individual houses, together with superior access to recreation space on roofs or in gardens, may be combined with the economies of greater heights. We find, then, that the borderline between the two types has been pushed back in many cases until we reach that group of planning features and comparative luxury services which require central management or maintennance, and whose arbitrary inclusion or exclusion may often be the basis of deciding whether a given project shall assume the form of grouped-dwellings or of apartments. There are still many factors of convenience which may be incorporated in



Ewing Galloway

Low cost elevator apartments built for Amalgamated Clothing Workers

GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS

either type. These include community assembly and recreation rooms, day-nurseries and kindergartens, central garage facilities, and the provision of apartment suites with flexible capacity.

Evolution of service factors in apartments of few stories:[*] The kinds of services required in lower types of apartment buildings are necessarily different from those of many-storied buildings. The tall apartment is necessarily more complicated; it is usually so related in plan to the shape and extent of its site, because of relatively complete coverage, that the development of definite types and standards of planning is not evident except in relation to competitive units within a single local area. The extent of services provided is more complex and varied. A study of the requirements of services in lower types, particularly in large scale projects, is therefore not only worthwhile in relation to the anticipated increase of problems in this field, but cannot fail as well to call attention to similar problems, though differently expressed in the taller structure.

Influence of elevators: New large scale apartment groups have recently been completed in the 6-story elevator class. This has been the chief factor in New York speculative building, owing to the fact that tenants who first refused to walk up more than four flights of stairs have more recently set the limit at three flights. However, the New York building laws permit 6-story dwellings in non-fireproof construction and the New York builder, accustomed to reaching this limit in the old days of non-elevator building, naturally carried over these traditions of cheap building into the push-button elevator era.

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[*] The underlying factors in the design of walk-up apartments were set forth by the author in *The Record*, March, 1929

The most important contribution of the year in the field of low-cost elevator buildings is the full block of 6-story apartments built for the Amalgamated Clothing Workers under the authority of the New York State Housing Board, at Grand Street, on the lower east side of New York. This is the third Amalgamated development, and the series forms an important link in large-scale construction of non-commercial projects—from the original large Bronx block of 5-story walk-up apartments in 1927 to the present fine group of elevator units. The architects of all three projects were Springsteen and Goldhammer.

Another very large construction, non-commercial in respect to current standards of site-utilization, is now under way, covering two city blocks originally a part of Sunnyside, in New York City. This group, being built for the Society of Phipps Houses, is particularly significant for this study as it combines in one project almost equal areas of 4-story walk-up and 6-story elevator units. The total number of rooms in the latter is greater, due to the additional height. The project presents many points of interest, some of which are discussed under another heading. Clarence S. Stein, as architect, is chiefly to be credited for the attempt to combine the two kinds of apartments in one block. The decision was reached only after very careful study of the construction and economic problems. This combination of two heights of buildings will have the very great advantage of relieving the group of the ponderous institutional aspect which has marred the effect of many large projects grouped around a single large interior court.

Influence of new construction methods and materials: Somewhat extravagant claims have been made of the cheapness with which new forms of smaller houses could be produced in quantity under factory methods, forgetting the fact that we cannot bring our house home and stand it at the curb like an automobile, but that it must be fitted to a scheme of community building and public utilities which are far from being turned out in factory quantities. Improvements in this line should be as effectively applied, and often more so, to more economical forms of group housing. These offer more ready application of quantity standardization and more feasible conditions of assembly and erection into efficient living units. It is the multi-family house that would be more largely relieved of its present unsatisfactory communication of noises, fire hazards and other group limitations due to older forms of construction, mainly inherited from a house-building age. A study of recent housing in Frankfort, where 11,000 units have been completed since 1925 under the direction of Ernst May, city architect and town planning officer, and built with structural elements manufactured in the municipally-owned research plant, will show to what extent these advantages can be applied equitably to both single and multi-family dwellings. The increased use of large glass surfaces is more noticeable in the latter. The individual house, on the other hand, has gained by the application of the same technique of space-saving, built-in furniture and appliances, which, with us, have been promoted primarily in connection with the apartment.

PLANNING FOR GREATER USEFULNESS:

The elements of service and construction thus far discussed concern only the minimum or utilitarian functions of the multi-family dwelling: provision of access and circulation, delivery of supplies and disposal of refuse, and a minimum of physical comfort in matters such as heat. (How long will it be until the self-respecting apartment must furnish humidified, laundered air, and a summer temperature like that of the movie cathedrals?) But to these things is being added a formidable and diversified list of amenities, accessory to the needs of habitation only, whose absence may soon become a factor in turning away prospective tenants—a rea-

8 and 4 family apartments with complete self service at Radburn, N. J.
CLARENCE S. STEIN, ARCHITECT

sonable degree of quiet from the neighboring radio; out-of-doors vistas that are reposeful and inviting; access to the health-giving agencies of sunlight and fresh air through the general use of balconies, roof terraces, and cubicles for sun-bathing; convenient parking and garage facilities. Such elements may, through proper planning, be provided in the small apartment operation almost as readily as in the largest project.

Community Features: Other elements of a community or social nature, however, bear a close relation to the size and resultant population of the housing project, and can be maintained only where these are reasonably large. Nursery schools will doubtless be increasingly related to projects of sufficient size to permit their practical operation; so will day-nurseries for children of mothers who are employed or otherwise taken out of their homes during the day. The whole range of more or less familiar community rooms and gathering places—auditorium, gamerooms, playgrounds for children and adults (so located as to be least annoying)—these become both practical and necessary with the increase in size of the apartment project. Coordinated retail store facilities, as well as communal laundries, kitchens and restaurants suitably located in basements or on roofs, are possibilities for lessening the expense and drudgery of housekeeping. And if we provide for the care and education of the child, why not take account of the leisure hobbies of the adult? One of the things most needful in apartment house living is a place to tinker; why not rooms for repairing the family radio, for hammering and sawing at the new book-shelves, for painting the kitchen chair? How many amateur photographers would bless (and rent from) the management which provided them a dark-room! These are a few of the possibilities for bringing the basement to life; it goes without saying that any spare planning intelligence can find odd jobs to do in the organization of space for suitable storage of trunks and household impedimenta, in the provision of perambulator and bicycle storage rooms.

Flexible treatment of living space: The planning of the individual apartment suite itself is susceptible to more imagination than has been bestowed on it, with a view to bringing it closer into line with the changing practical needs of families.

The guest room and the maid's room have been forced out of existence by our contracting space provisions. Larger apartment projects can, as some do, readily provide a number of single rooms and baths available to tenants by prearrangement for their use.

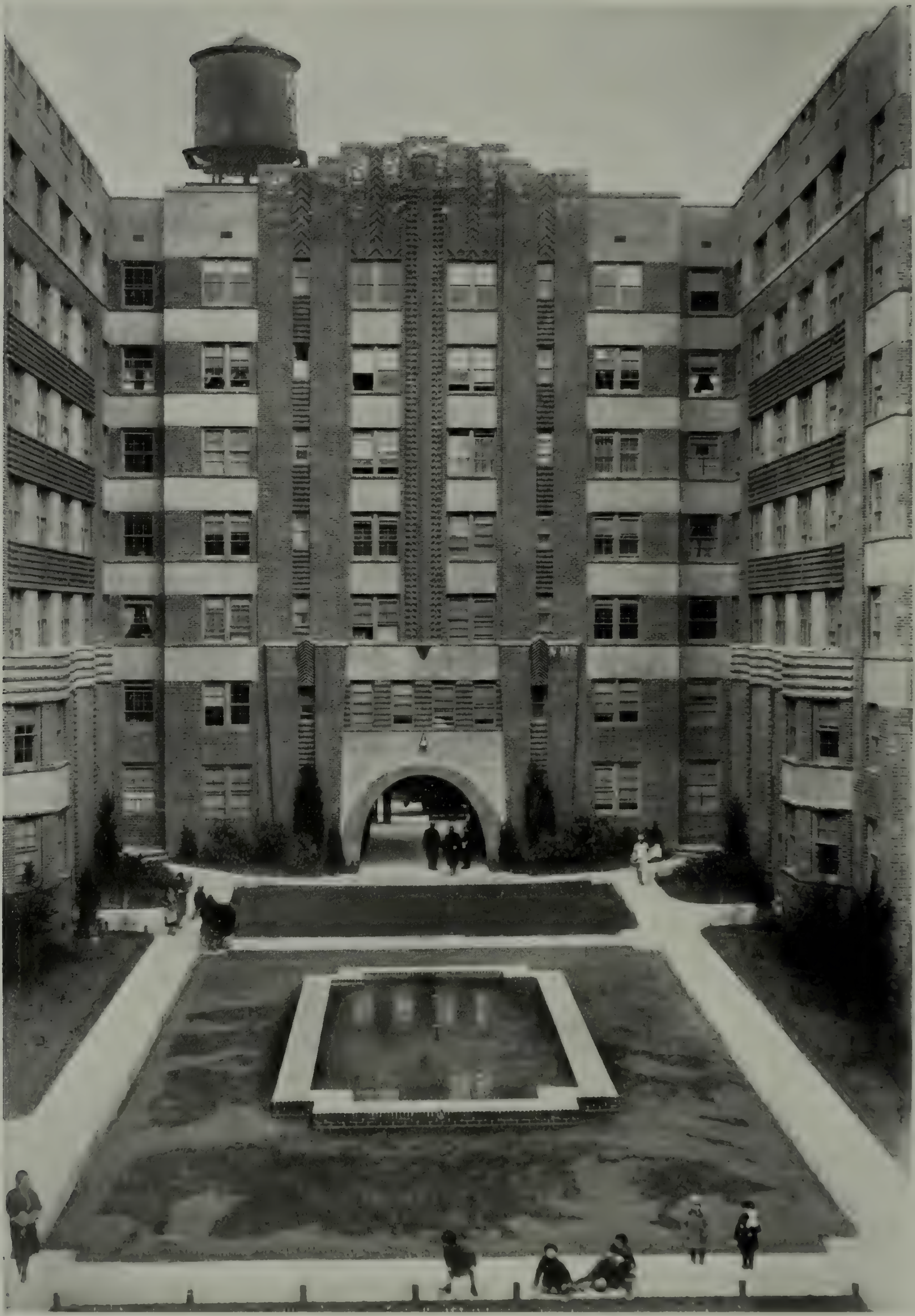
Apartments for those with summer seashore or country habitats: Even among people of moderate means there are many who prefer to have a small city apartment and a real country place, to an intermediate suburban

Larger apartment groups at Radburn: N. J.
ANDREW J. THOMAS, ARCHITECT

home where commuting is continually necessary and yet does not afford a real relief from city existence. Especially for large families it becomes difficult to maintain adequate space in the city, where rents must continue in force at all times. Might it not be possible to arrange some parts of an apartment project so that two, four, or more apartments, say on two adjacent floors, could be expanded or contracted like first and second class on shipboard? Thus the group could be adjusted by proper prearrangement and accounting for the use of the exchangeable space to suit the varying needs of the occasion. This would be a particular help in connection with families having young members at the marrying age.

Another possibility is an apartment so arranged that one room can be shut off with the more private and individual possessions of the family, and the other rooms sublet for the summer. An extra bath and direct access from a foyer would make possible the occasional use of the room by a member of the family when in the city during the period.

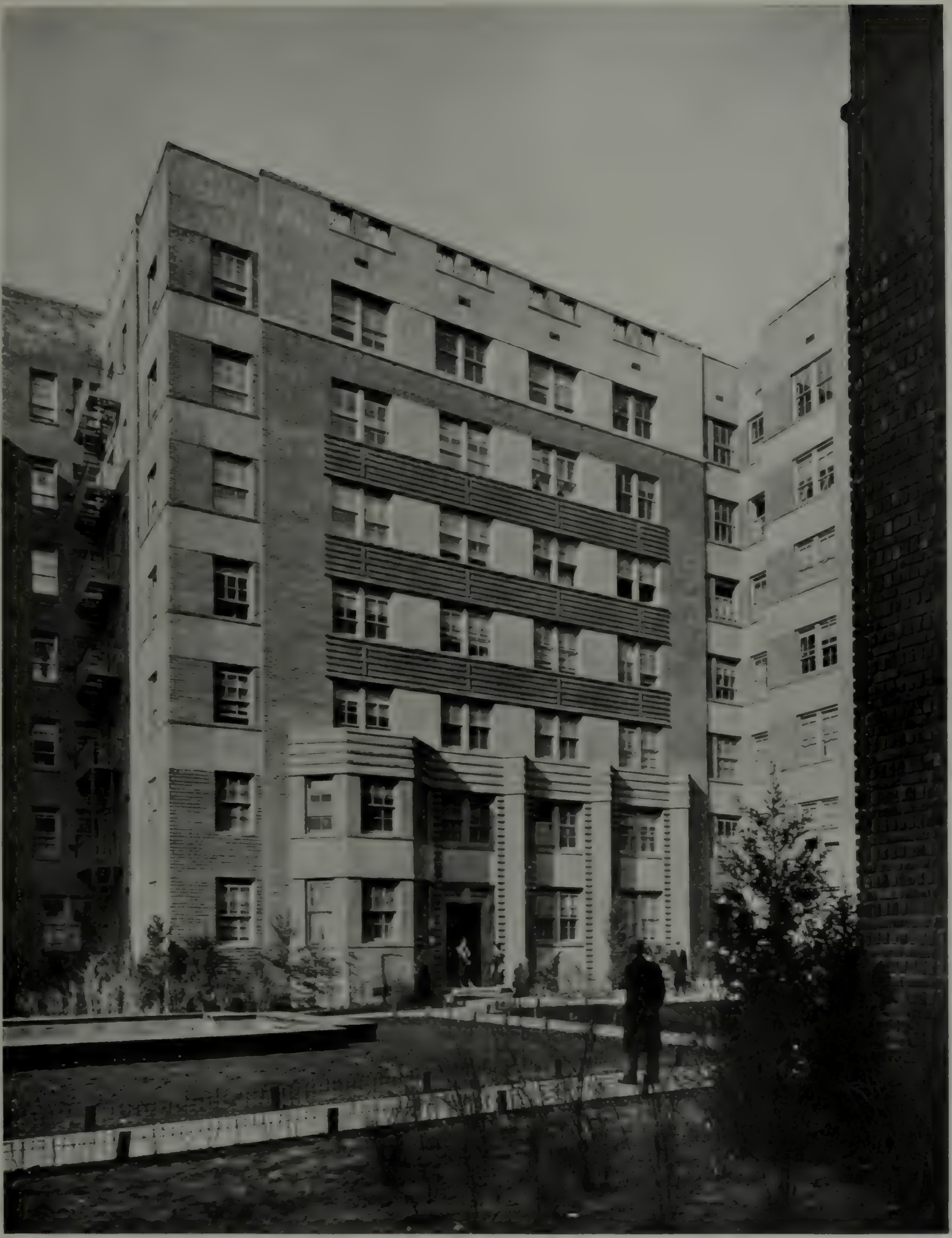
Future trends: In past years the discussion of this subject has centered upon the relative merits of the single-family house and the apartment. To many the single-family house has connoted the detached and preferably individually-built structure, which has been fostered both because of its sentimental associations and its adaptability to the business of producing lots. The choice, however, would now seem to shift to one between a casual procedure on the one hand, whether in relation to the single unit or the repetitive, speculatively-built house, and the technically guided group-dwelling on the other. In the former we have the prospect of new modes in style and improved materials, the flat roof and other changes which, casually handled and added to the crude efforts of the past, will either increase the haphazardness of our individually-built neighborhoods or add to the monotony of our speculative rows. Our only hope of averting this deplorable prospect is the intervention of technical skill in adjusting these changes to the purposes and benefits of group arrangement. Such group arrangement should find the logical and necessary adjustments between freedom and orderliness, which will be more likely to extend the independence of individual home units upon an economic basis than can be anticipated under a continuance of our present wasteful practices. Technical procedure may be counted upon to evolve a better adjustment of costs in regard to the economic relation of public utilities, habitation space, and service provision, while popular choice may be left to determine the merits as between the more independent forms of grouped individual units, limited to a few stories, and those more compactly organized forms of apartments which require joint participation in their service and access features.



Ewing Galloway

These apartments are cooperative, built to replace old tenements on lower East Side of New York. Rentals are $12.50 a month for each room.

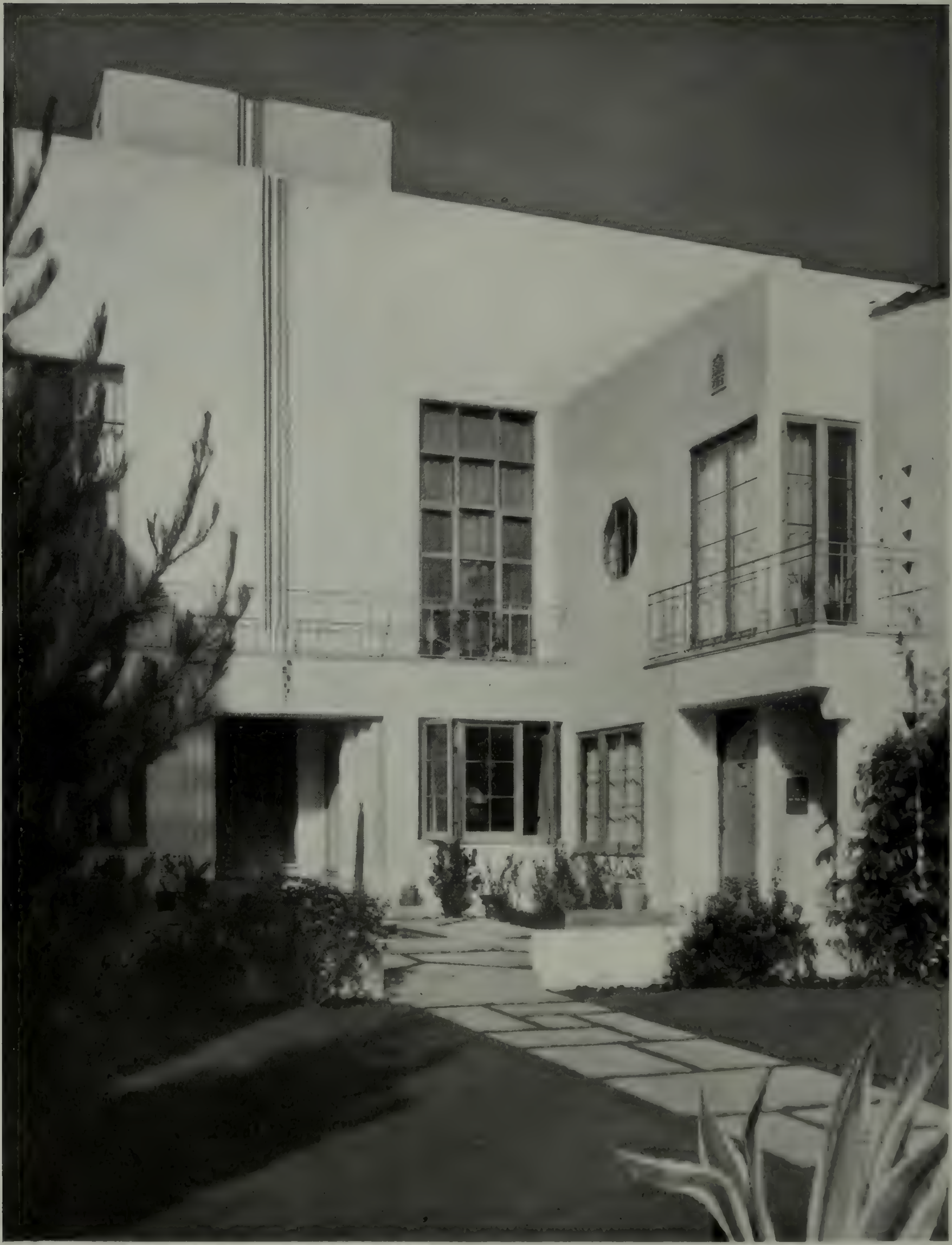
GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS



Gottscho

The project has been awarded the 1931 apartment house medal of the New York Chapter of the American Institute of Architects.

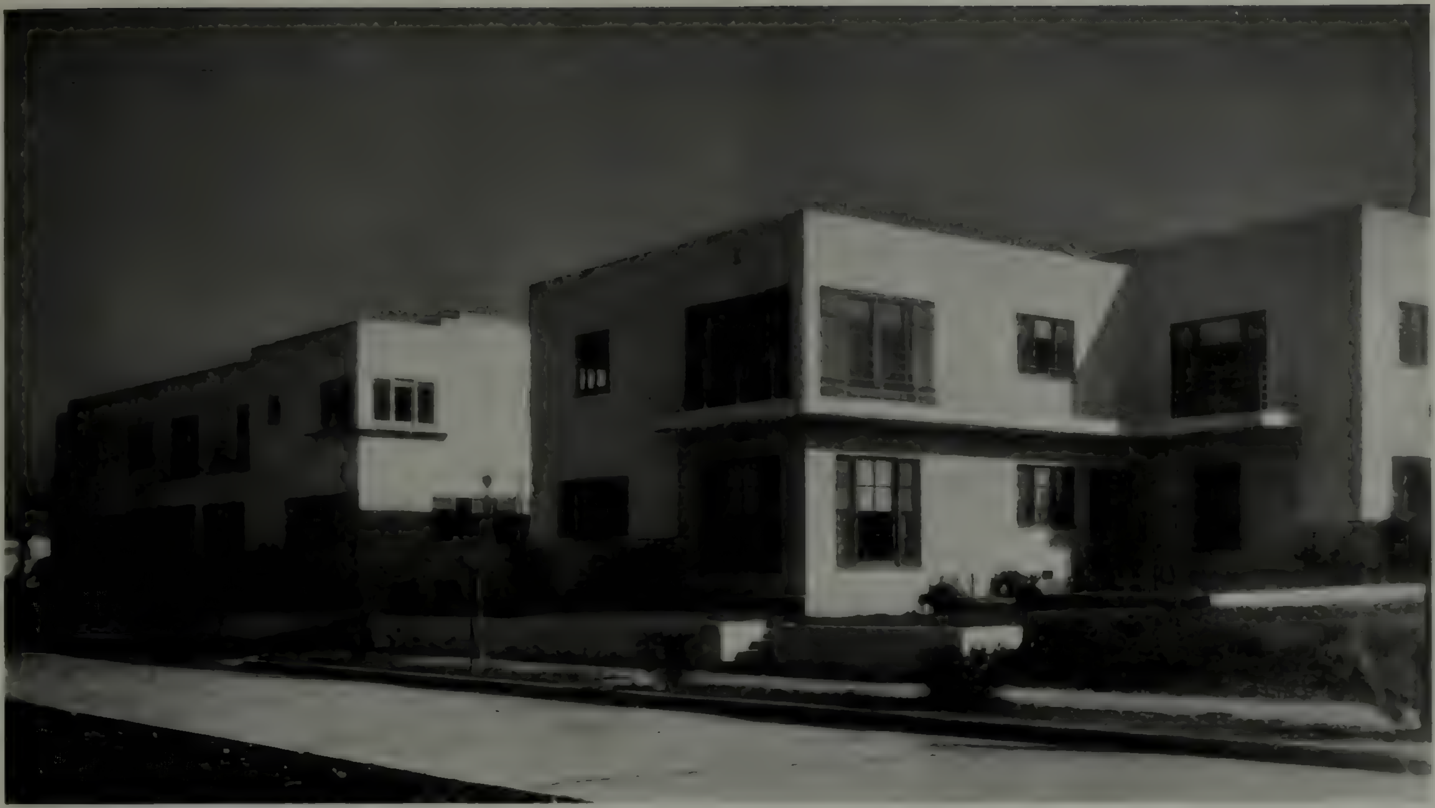
GRAND STREET APARTMENTS, NEW YORK CITY
SPRINGSTEEN AND GOLDHAMMER, ARCHITECTS



Berne

AUDUBON APARTMENTS, LOS ANGELES

FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



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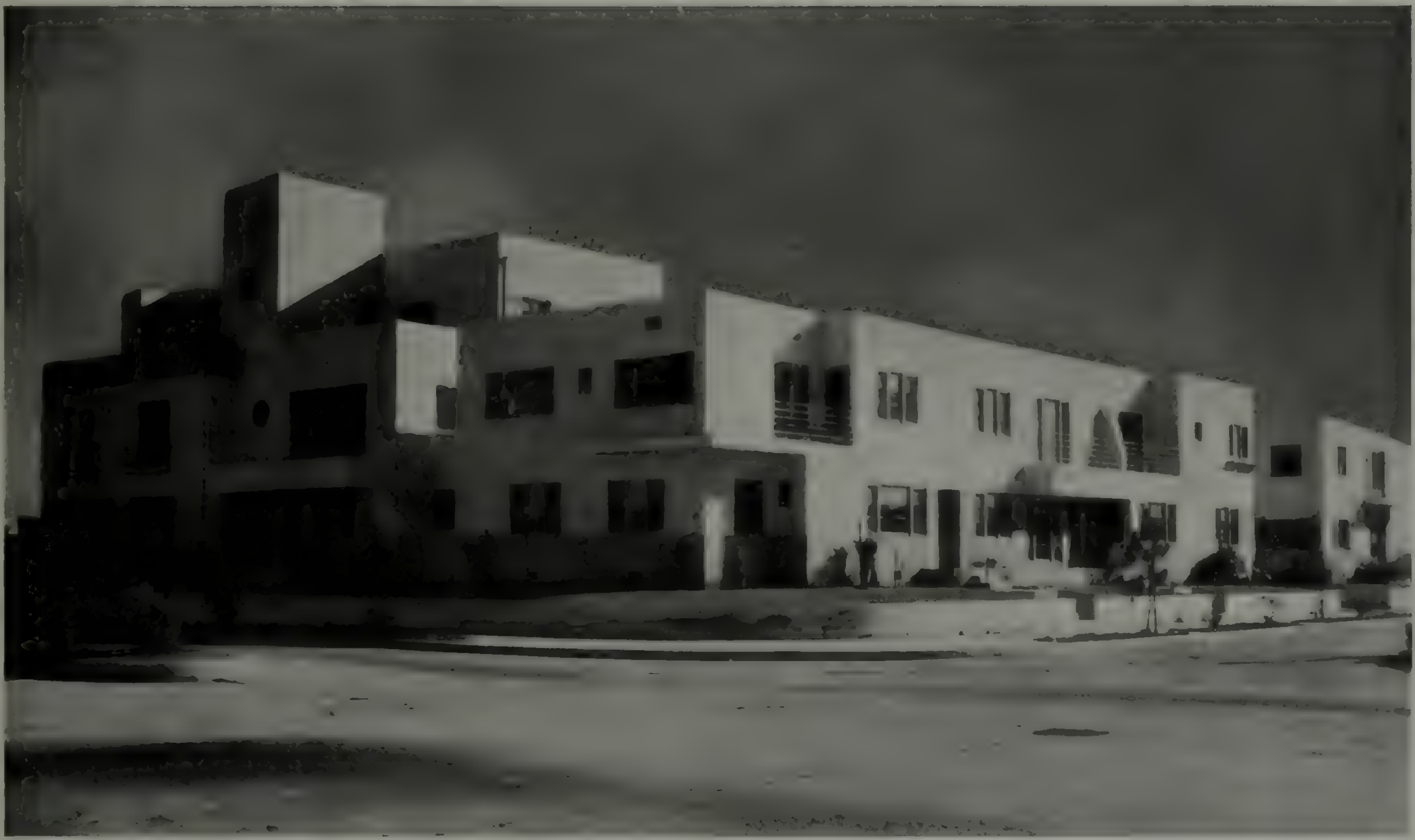
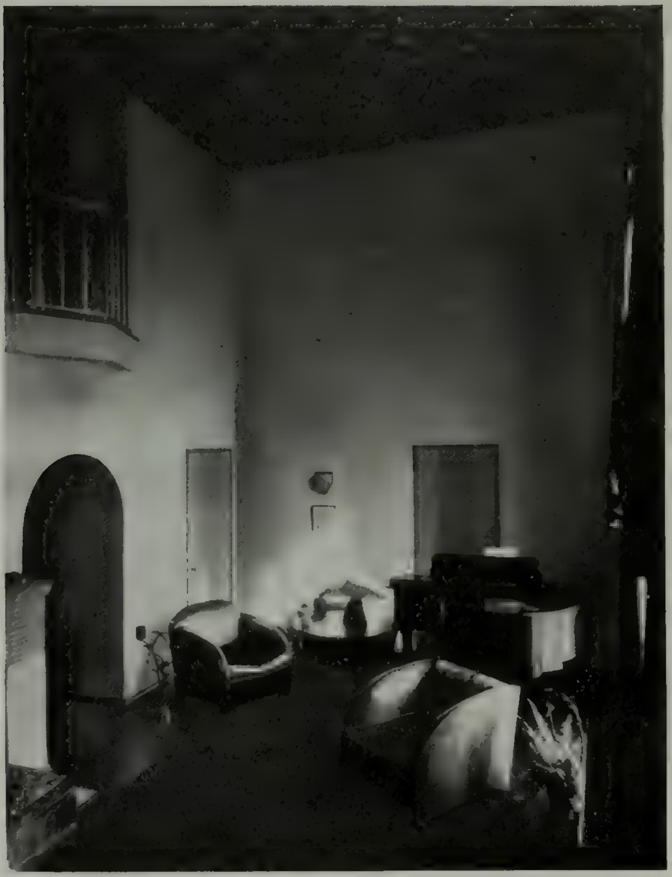


Berne

BAXTER APARTMENTS, LOS ANGELES

FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT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Berne

APARTMENT INTERIORS
FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT

AUDUBON APARTMENTS (See plan on page 260)

Project: 12 unfurnished apartments flats with 12 garages on an inside lot 100′ by 110′.

Planning features: Each tenant has direct entrance to the street and garden. This provision entirely eliminated "back" and "side" apartments and their corresponding lower rental values. Public halls were reduced to a minimum. A minimum layout of a living room with wall bed, dining alcove, kitchen, bedroom, bath, and the necessary closets, was adopted. In southern California this is the most popular size for unfurnished apartments.

Construction: The building is nonfireproof, frame construction with cement plaster on the exterior.

Color scheme: The exterior plaster has a cement color coat of white with a touch of blue-green. The roofs are part clay tile and part composition. The exterior woodwork is a dark blue-green and the ironwork is dull silver. The entrance doors are in various bright colors, with colored decorations and silver studs.

Total cost, including architects' fee: $35,000.

Cost per cubic foot: approximately 24c.

BAXTER APARTMENTS (See plan on back of frontispiece)

Project: A group of three 6-unit unfurnished apartment flat buildings with necessary garages located on the southeast corner of Stocker Avenue and Degnan Boulevard. It was necessary to separate the buildings and to arrange the garages so that they could be sold independently.

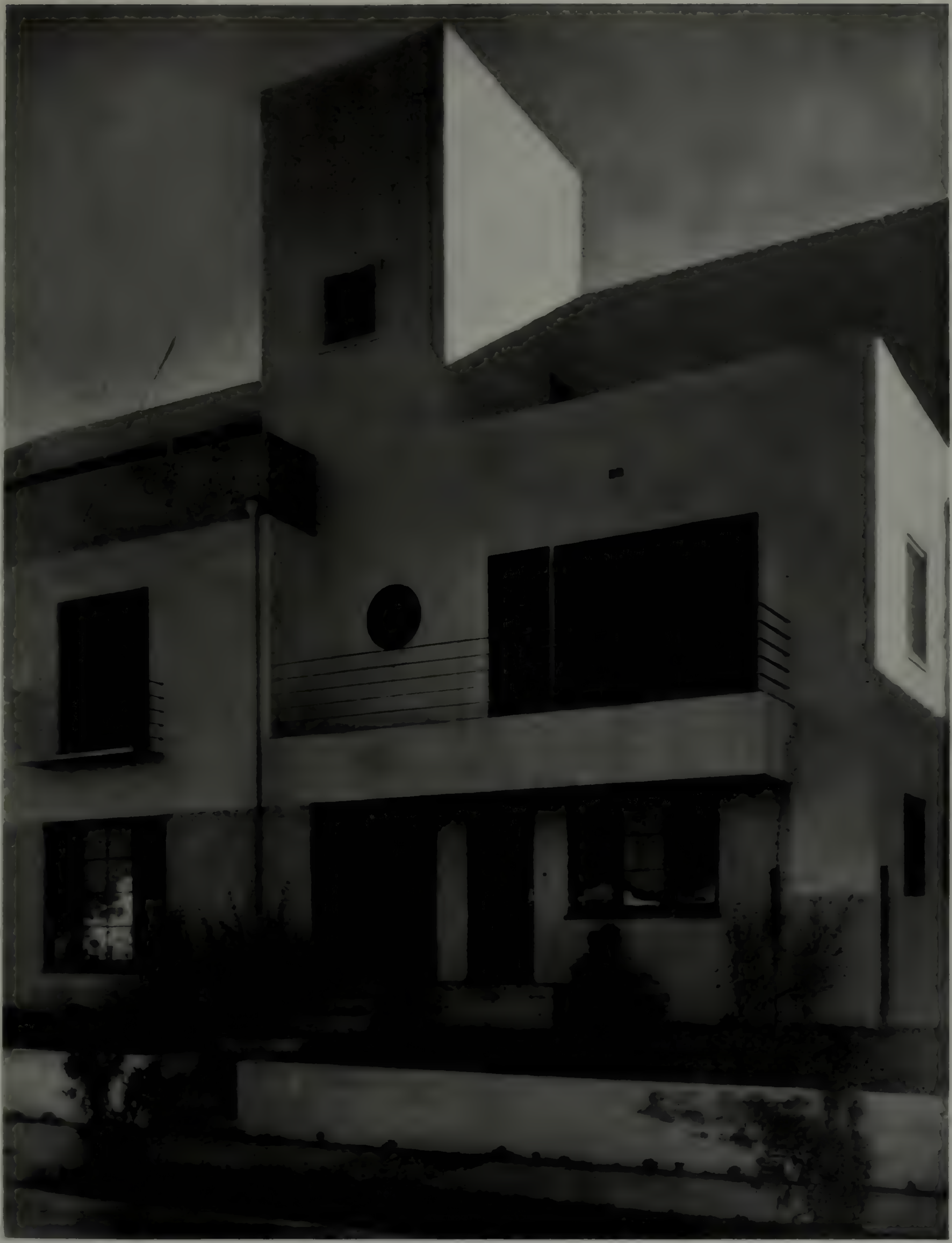
Planning features: Similar to Audubon Apartments.

Construction: Same as for the Audubon Apartments.

Color scheme: Various portions of the exterior plastered walls are combed horizontally and then colored a darker shade. The outside walls of each building are set off by three slightly different light colors. The windows in each building are also painted differently, in cold green, mauve, and yellow. All shutters painted a heavy green. The ironwork is silver.

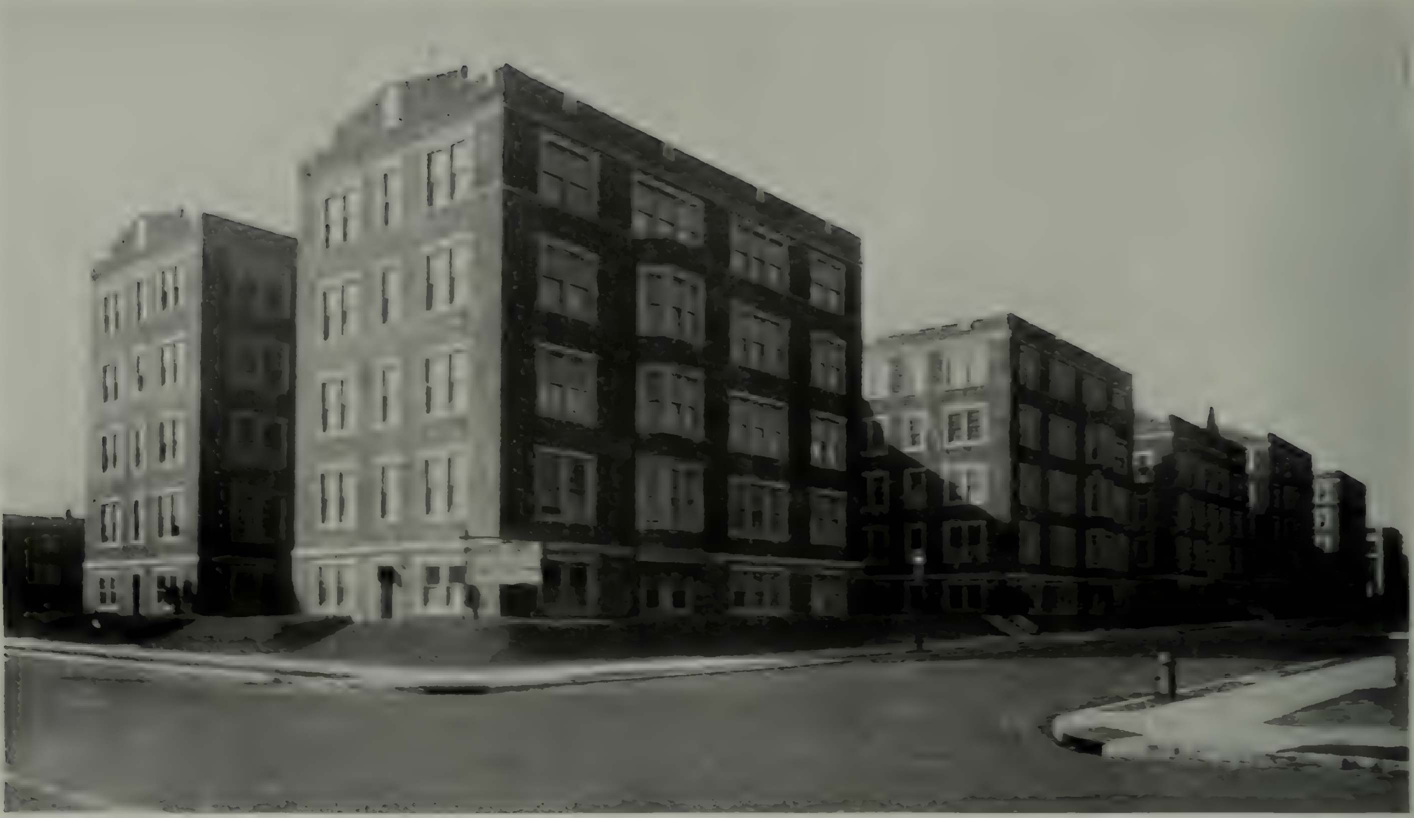
Total cost, including architects' fee: $46,000.

Cost per cubic foot: approximately 22c.

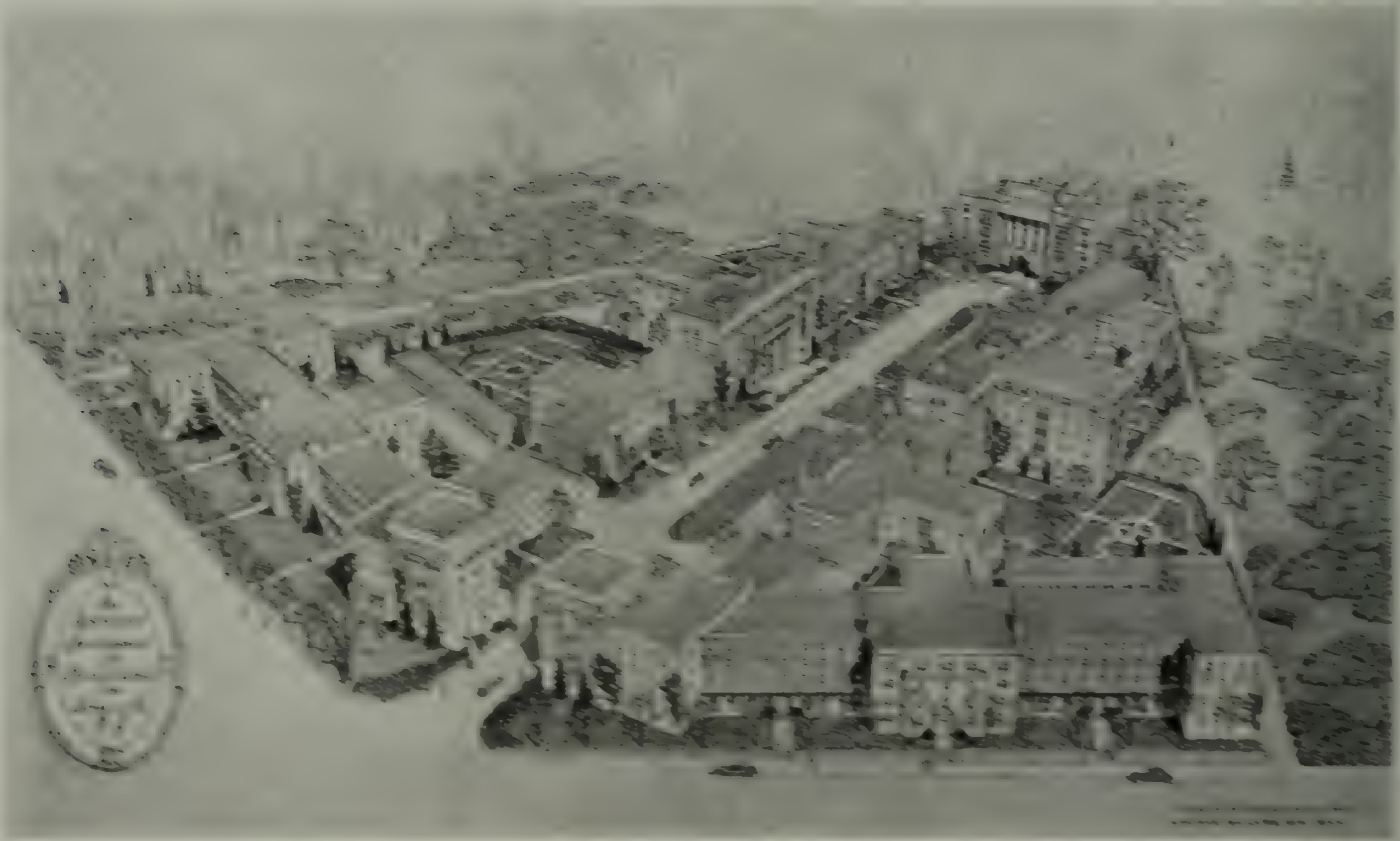


Berne

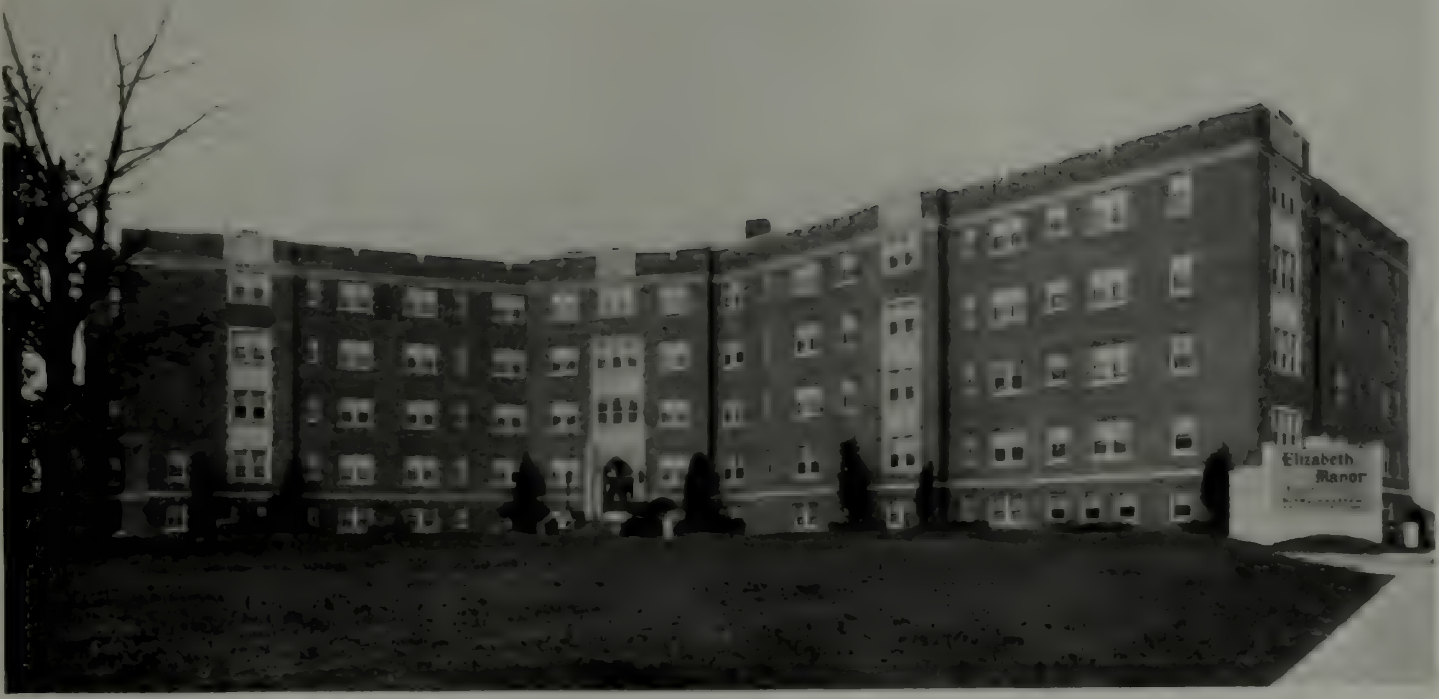
BAXTER APARTMENTS, LOS ANGELES
FRANZ HERDING, CITY PLANNING ARCHITECT
GEORGE J. ADAMS, ARCHITECT



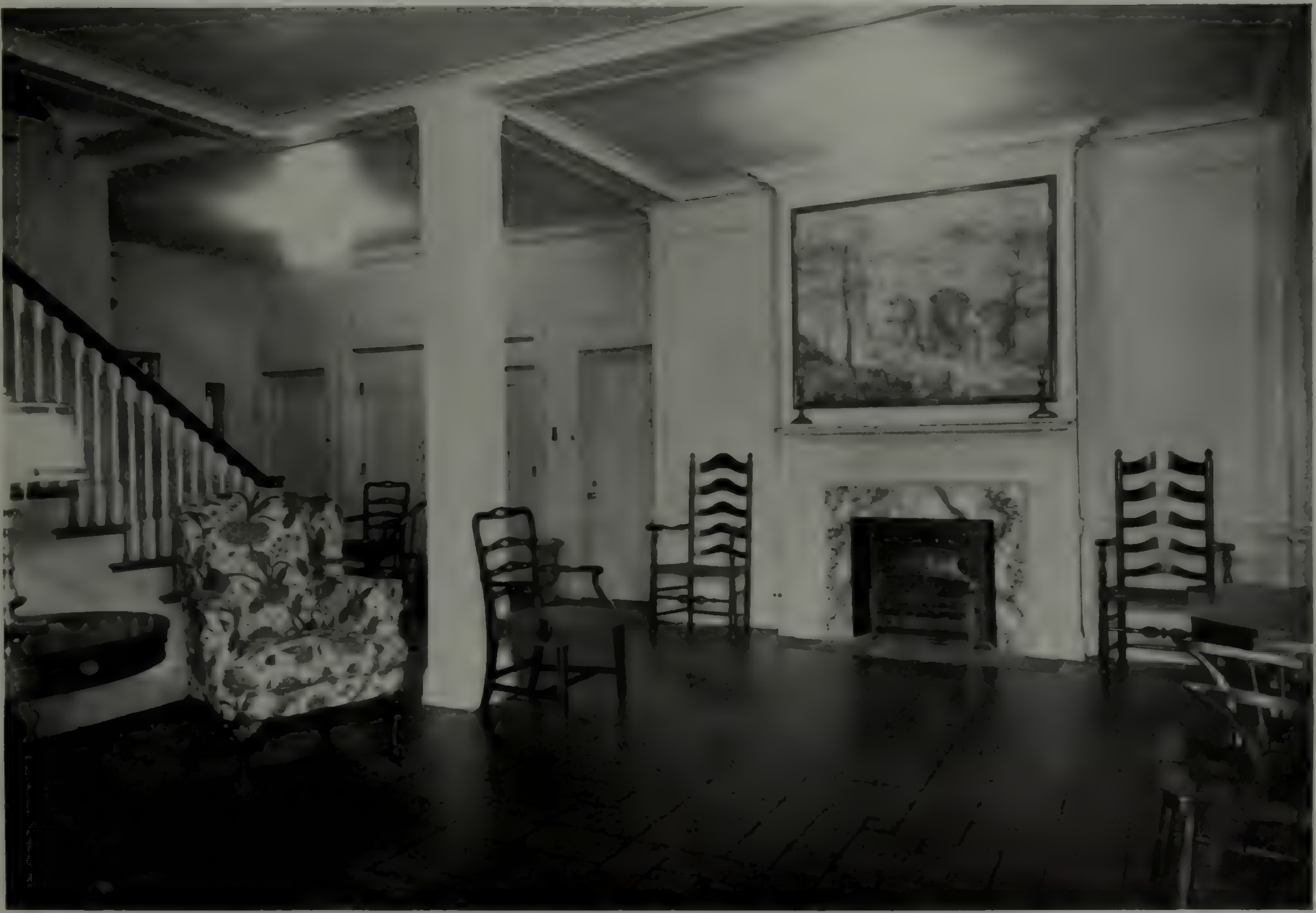
PINE STREET APARTMENTS, PHILADELPHIA
CLARENCE E. WUNDER, ARCHITECT



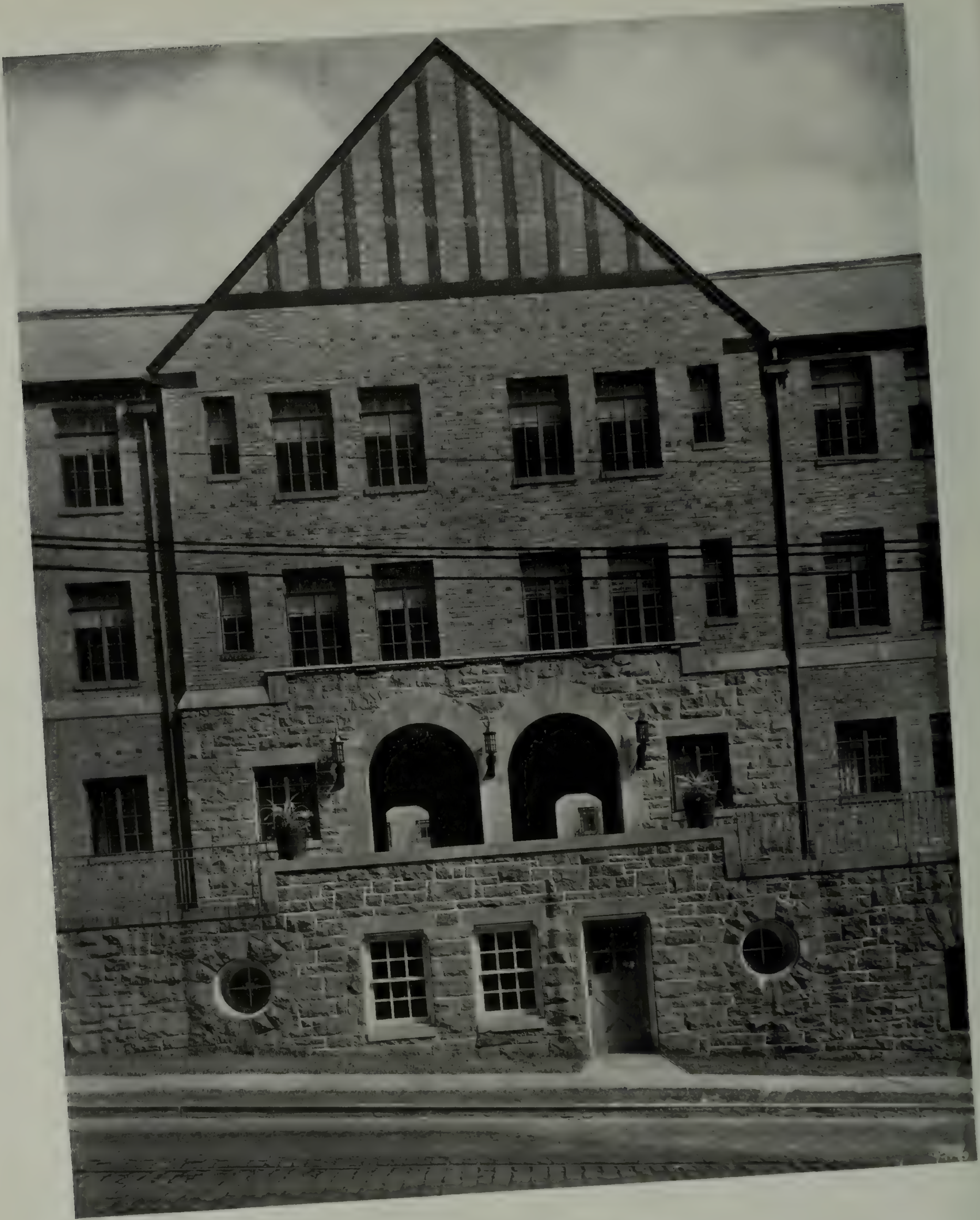
APARTMENT DEVELOPMENT, BRONXVILLE, N. Y.
PENROSE V. STOUT, ARCHITECT



ELIZABETH MANOR, UPPER DARBY, PA.
CLARENCE E. WUNDER, ARCHITECT

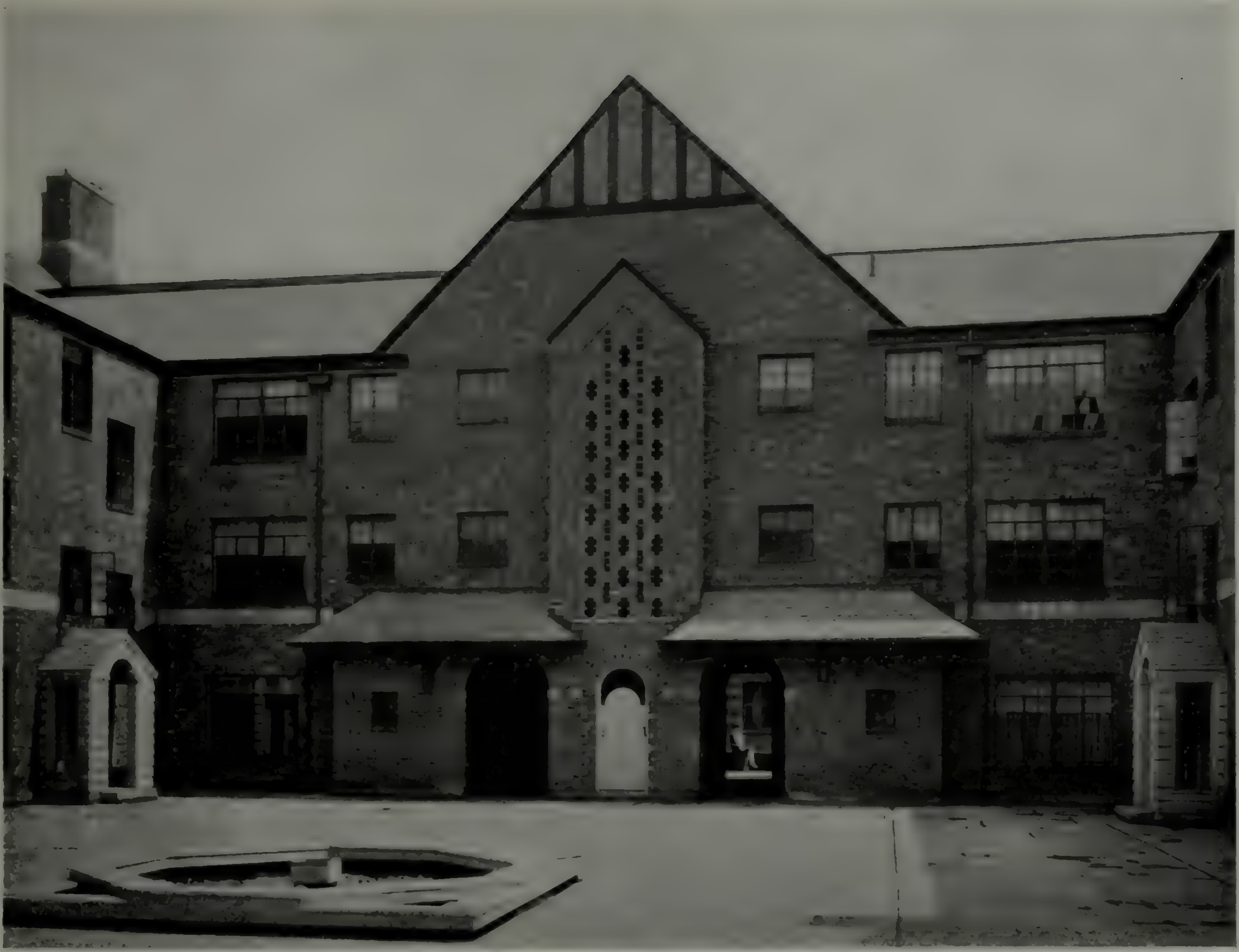


KINGSWAY APARTMENTS, HADDONFIELD, N. J.
CLARENCE E. WUNDER, ARCHITECT

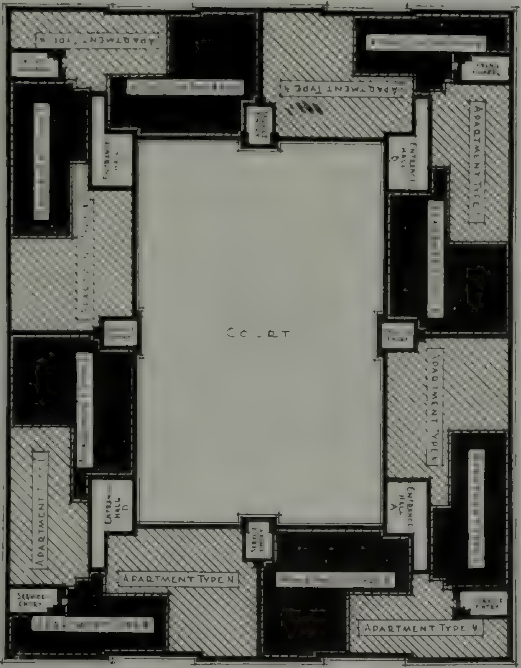


Trinity Court Studio

PENNSYLVANIA APARTMENTS, PITTSBURGH
D. A. CRONE, ARCHITECT



PENNSYLVANIA APARTMENTS, PITTSBURGH
D. A. CRONE, ARCHITECT



Layout: Units with direct sunlight. Complete home accommodations. All outside rooms. Direct connection to garage under the court.

Site: Fronts on three streets. Grade difference on diagonal corners about 17′.

Rentals: Prices range from $100 to $600 a month.

Exterior walls: Common brick, hollow tile backups.

Exterior colors: Brick, dark red; mortar, tan; steel sash, green; entrance, white enamel.

Roof: Slate.

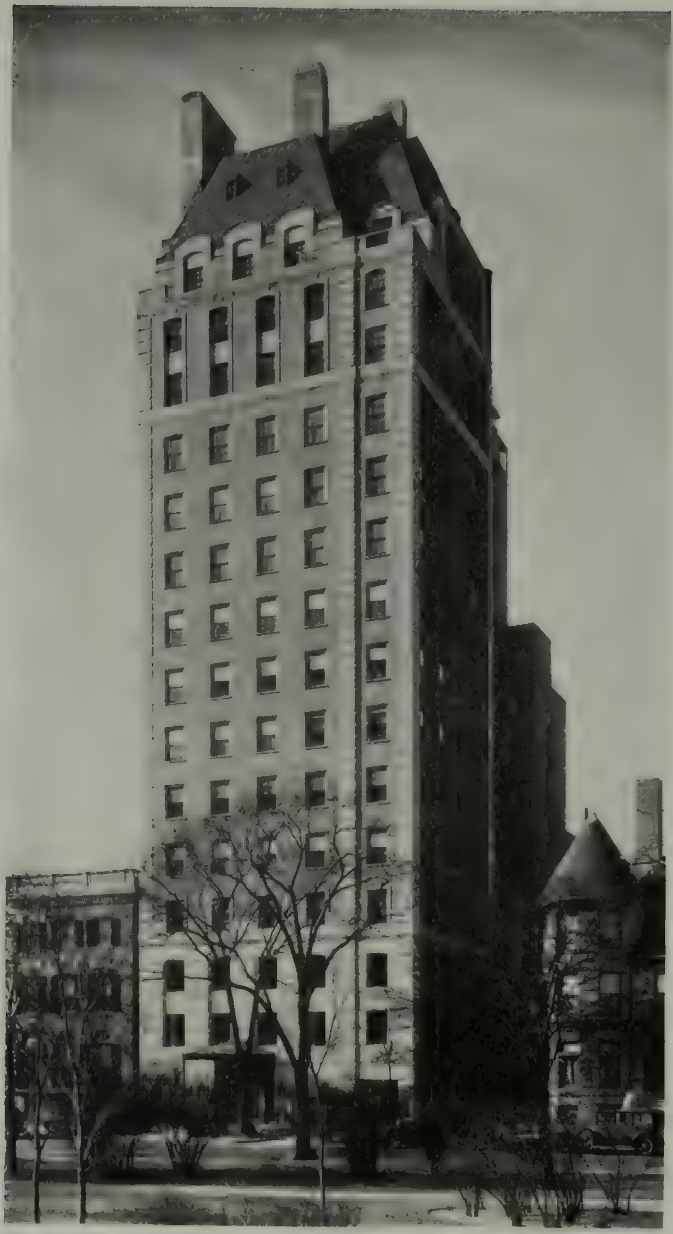
Floors: Concrete slabs, steel joist, wood sleepers, plain cut oak finished floors.

Interior walls: Steel studs, sheet rock, sand finish plaster, painted a very light tan with carefully proportioned amount of violet mixed in.

Stairhall walls: Concrete block with special surface composed of cement, mica and a few green marble chips. Joints lined off with ½″ projection, ¾″ wide, white cement. Floors and stair treads of white terrazzo. Stair rails of simple iron, round wood handrail, enameled white and green, high gloss.

Building cost (excluding land): $510,000.

Cost per cubic foot: 63c, including 40-car garage under the court.



Chicago Architectural Photographing Co.

1530 N. STATE PARKWAY COOPERATIVE APARTMENTS, CHICAGO

GRANGER AND BOLLENBACHER, ARCHITECTS

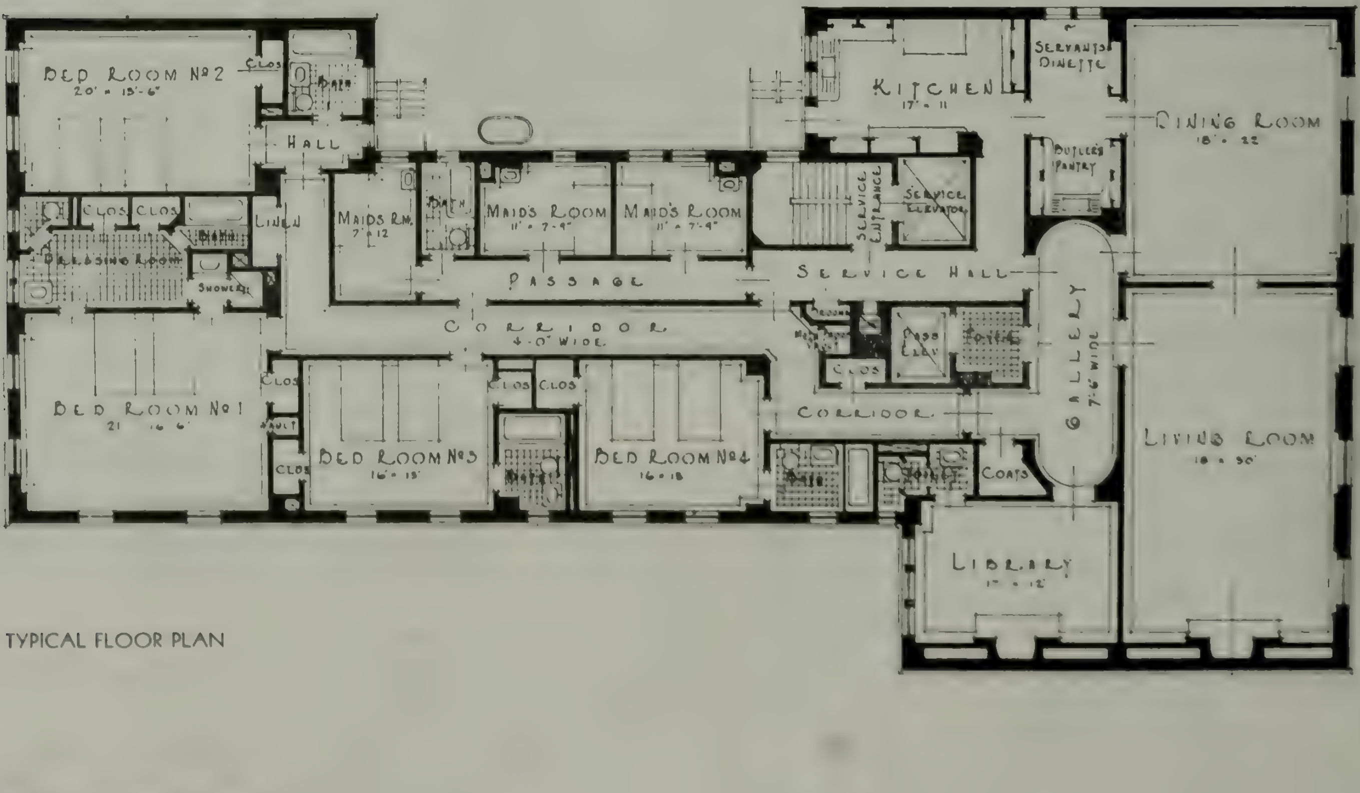
Construction: Reinforced concrete, with curtain walls of face brick and Indiana limestone.

Exterior colors: Pink face brick, limestone trim and Belgian black marble entrance.

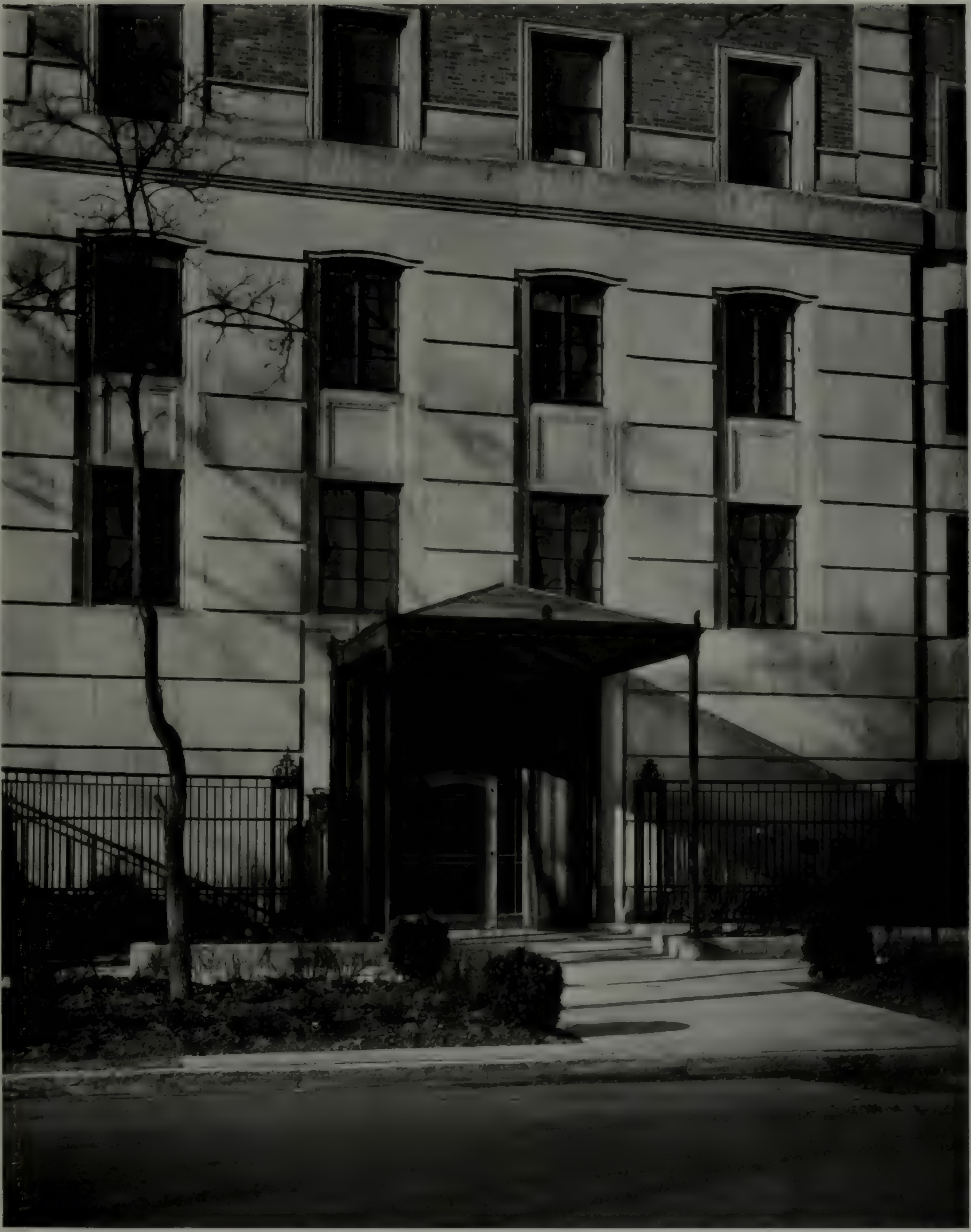
Site: Inside lot 55′ by 150′.

Total cost of the building: $750,000.

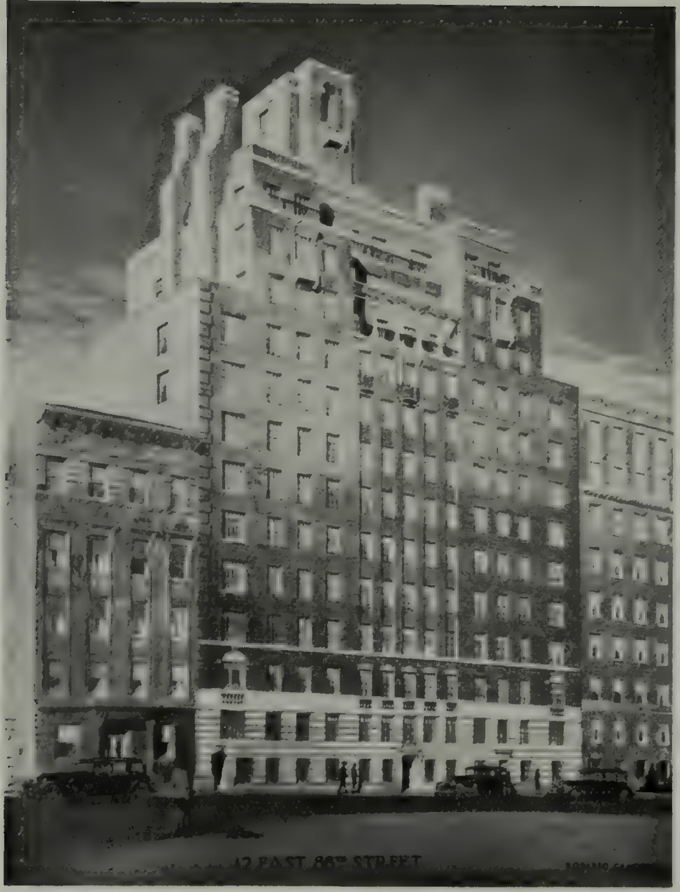
Cost per cubic foot: 92c.



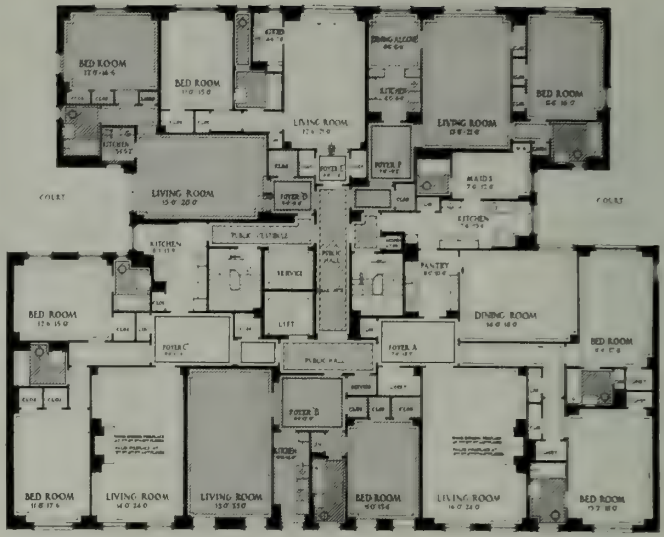
TYPICAL FLOOR PLAN



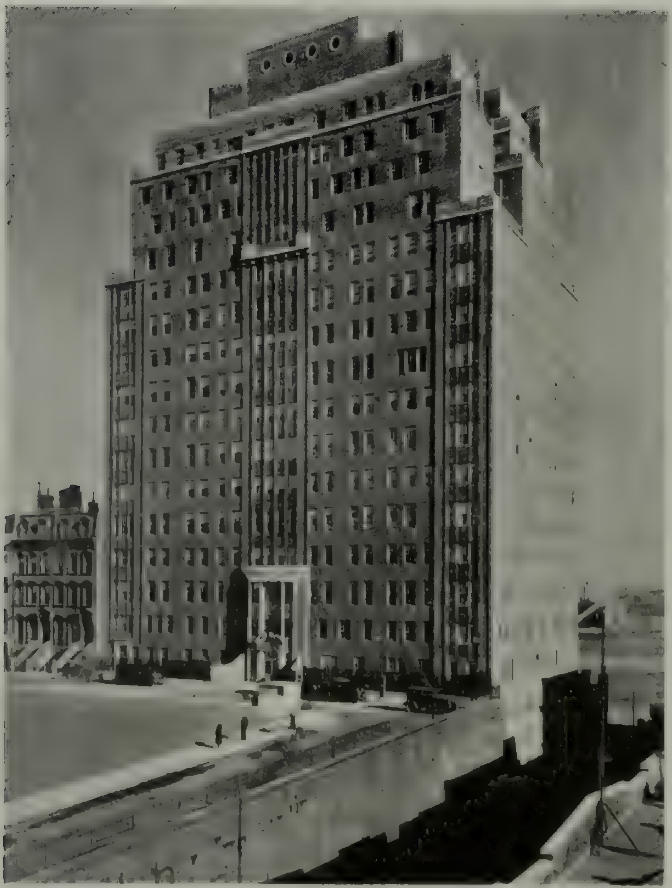
1530 N. STATE PARKWAY COOPERATIVE APARTMENTS, CHICAGO
GRANGER AND BOLLENBACHER, ARCHITECTS

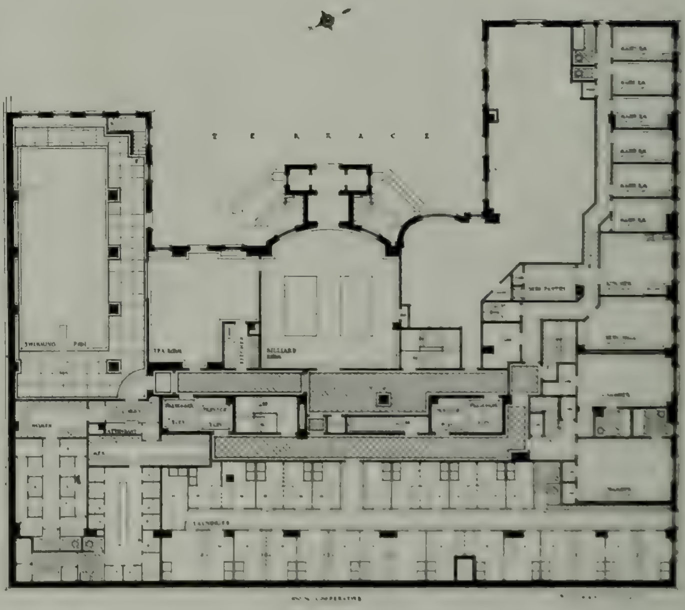


Guild-Warnick



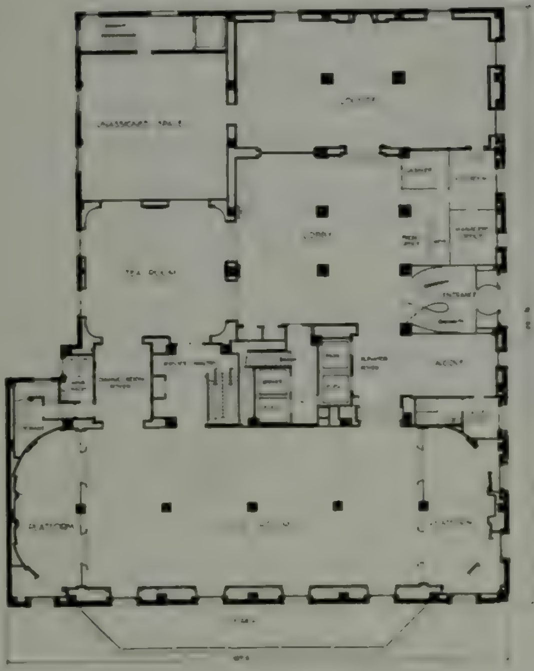
12 EAST 88TH STREET
NEW YORK CITY
ROSARIO CANDELA, ARCHITECT

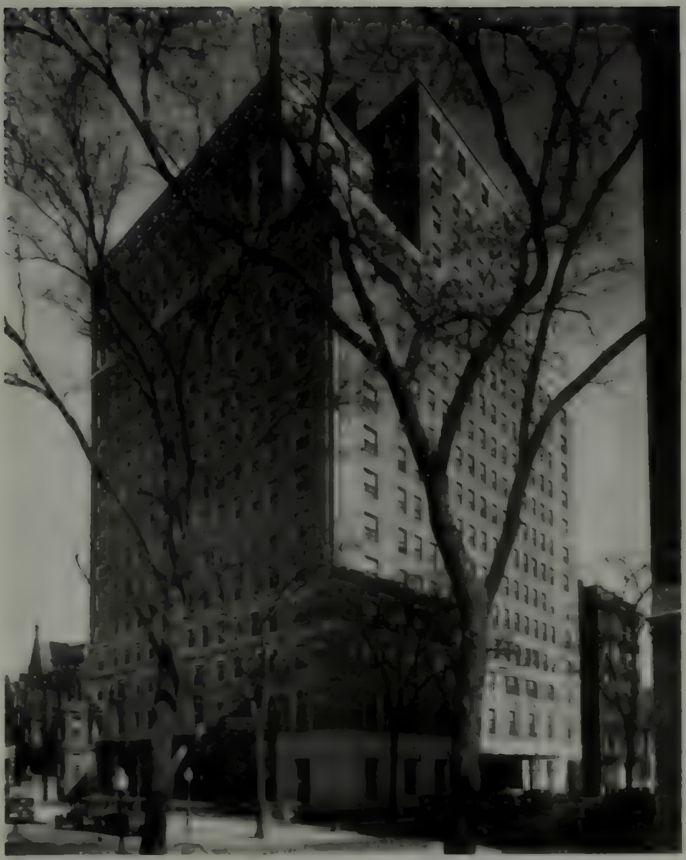




1 BEEKMAN PLACE
NEW YORK CITY
SLOAN & ROBERTSON, ARCHITECTS
CORBETT, HARRISON & MACMURRAY
CONSULTING ARCHITECTS

AMBASSADOR EAST HOTEL
CHICAGO
ROBERT S. DeGOLYER AND COMPANY
ARCHITECTS

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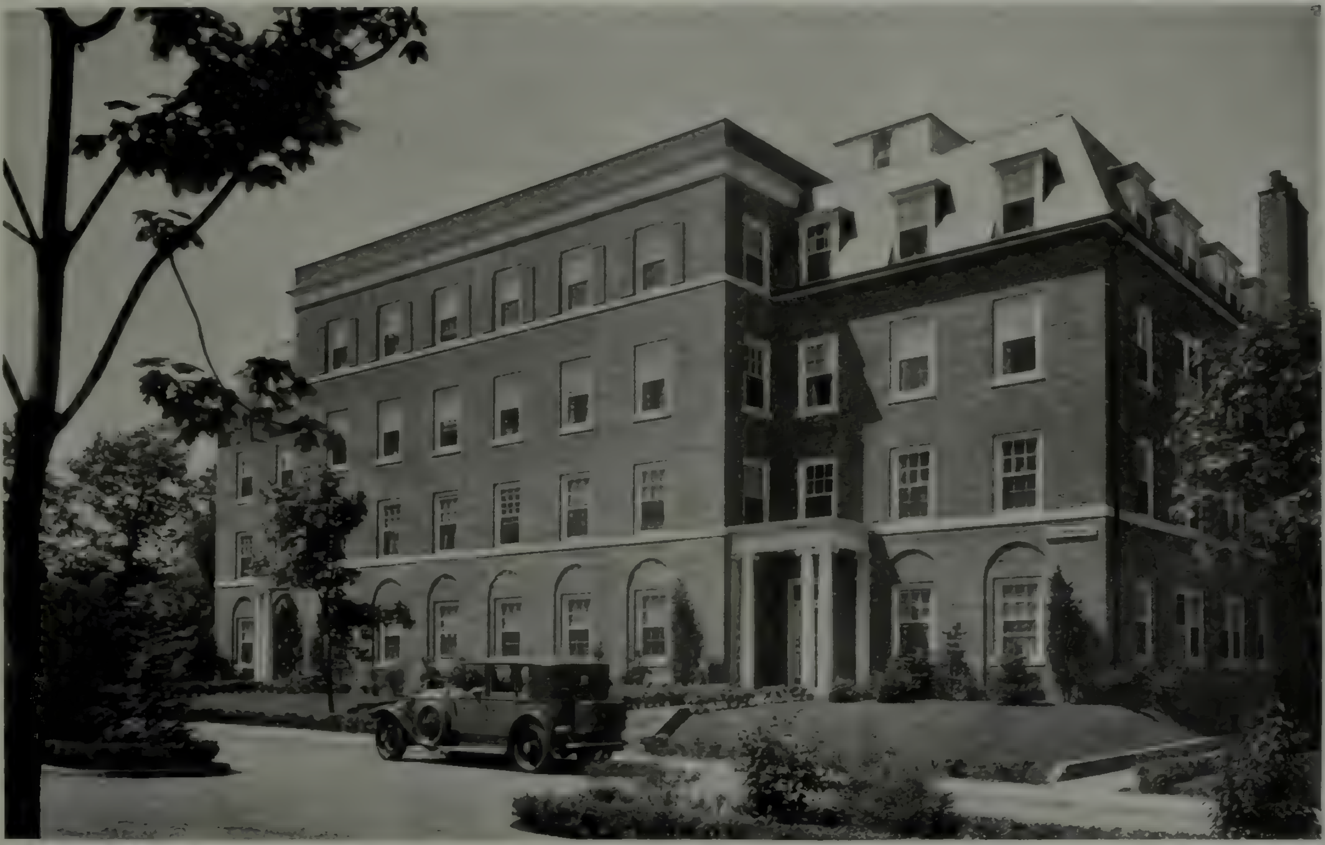
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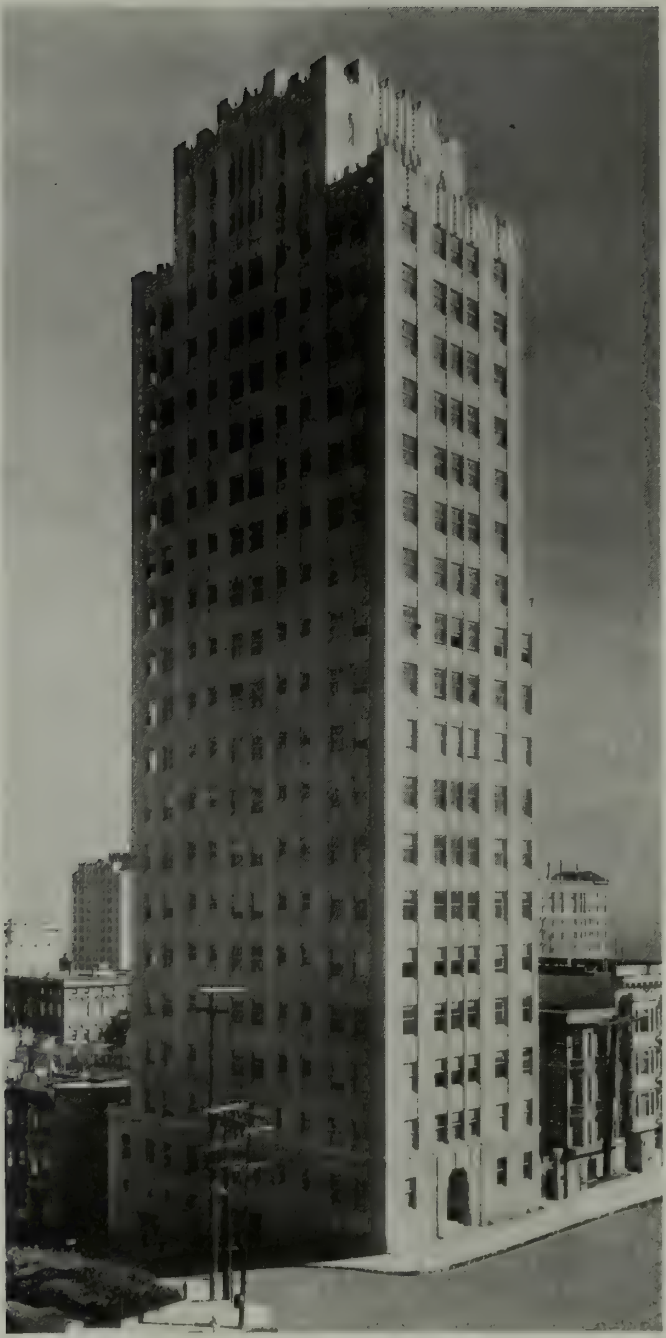
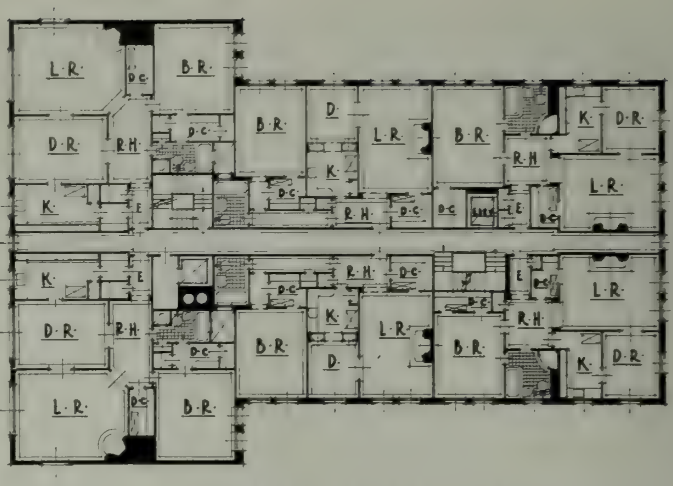
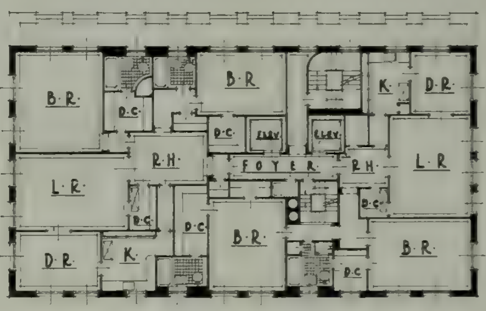
WINTHROP HALL, BRONXVILLE, NEW YORK
PENROSE V. STOUT, ARCHITECT



Moulin



TYPICAL FLOOR PLAN



11TH TO 17TH FLOORS INCLUSIVE

CLAY-JONES APARTMENTS
SAN FRANCISCO
ALBERT H. LARSEN, ARCHITECT

Total number of apartments: 47.

Total number of rooms per apartment: 4 rooms, 5 rooms.

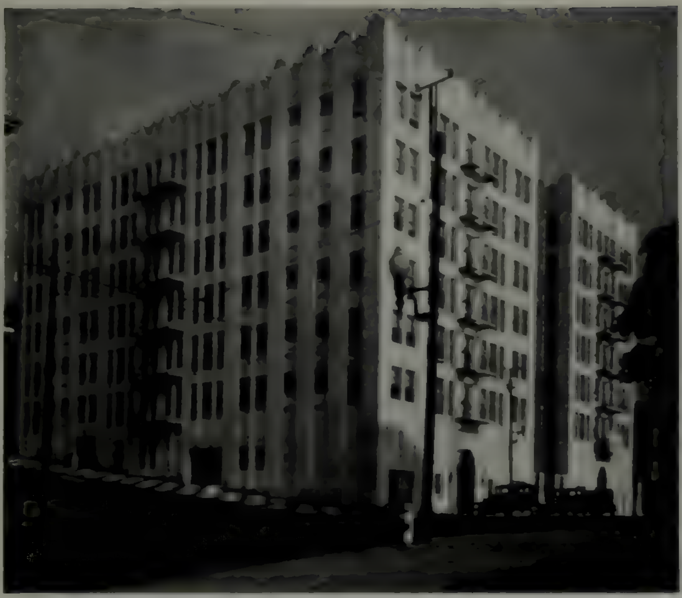
Construction: Steel frame; concrete floor slabs; wood double-hung windows; wood trim.

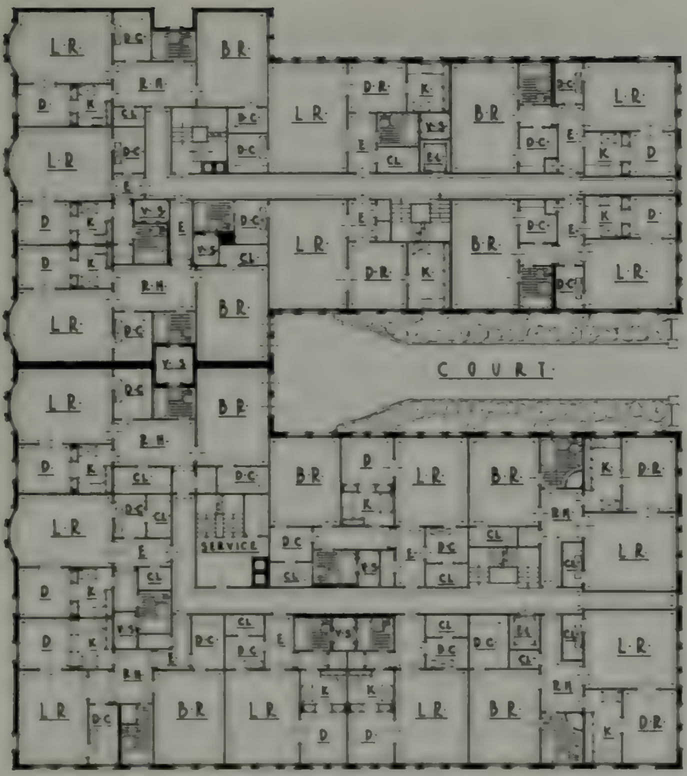
Heating: Steam.

Plumbing: Separate showers.

Total cost: $585,000.

Cost per cubic foot: 60c.

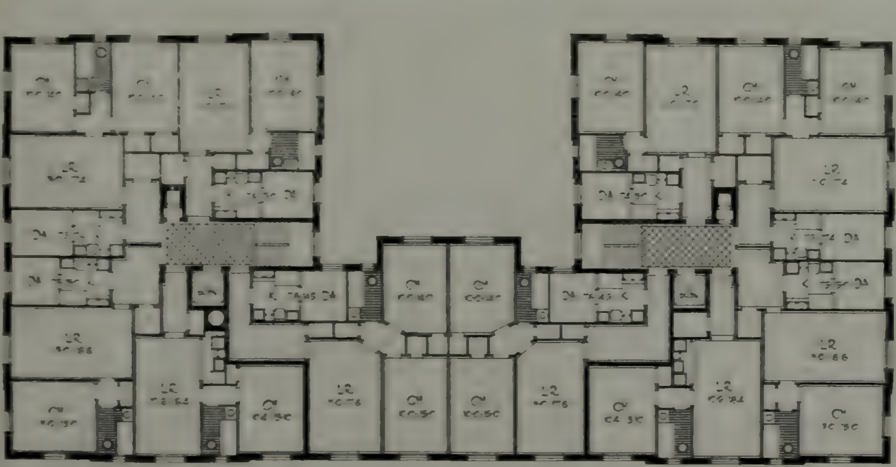




EDDY-OCTAVIA APARTMENTS
SAN FRANCISCO
ALBERT H. LARSEN, ARCHITECT

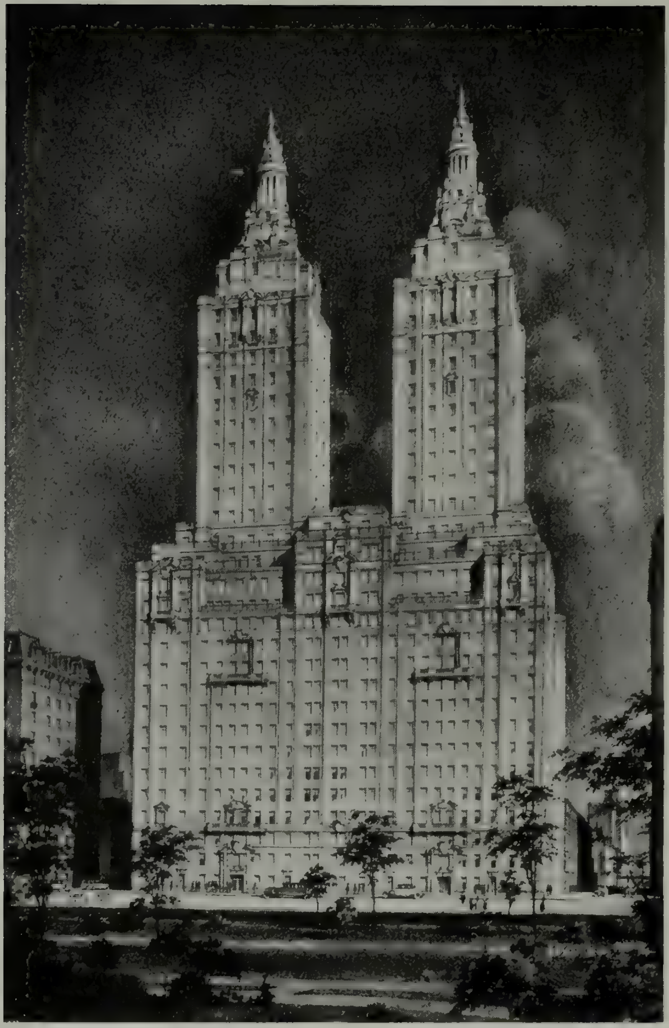
Project: Comprises two separate buildings.
Total number of apartments: 48 (No. 1); 42 (No. 2).
Total number of apartments per floor: 8 and 7.
Construction: Steel frame; floors, wood joists; wood double-hung windows, wood trim.
Heating: Steam.
Plumbing: Showers over tub.
Total cost: $250,000 (No. 1); $265,000 (No. 2).
Cost per cubic foot: 38c (No. 1); 38c (No. 2).

Dreyer

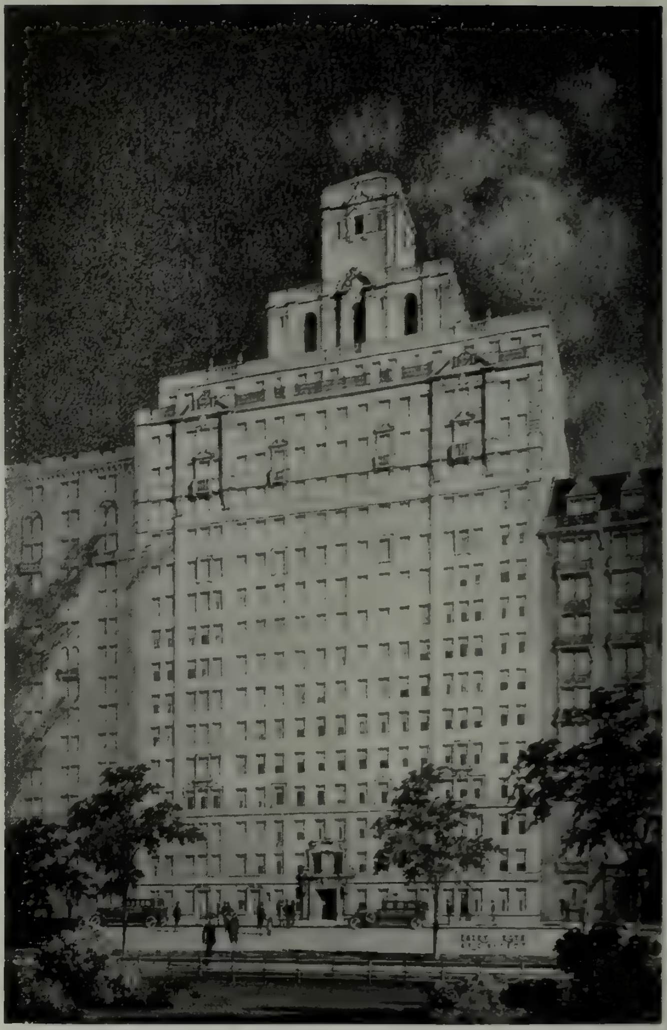


EIGHT 6-STORY ELEVATOR APARTMENT HOUSES
COMMONWEALTH, RANDALL, ROSEDALE AND LACOMBE AVENUES, BOROUGH OF BRONX, NEW YORK CITY

SPRINGSTEEN & GOLDHAMMER
ARCHITECTS



Wurts Bros.

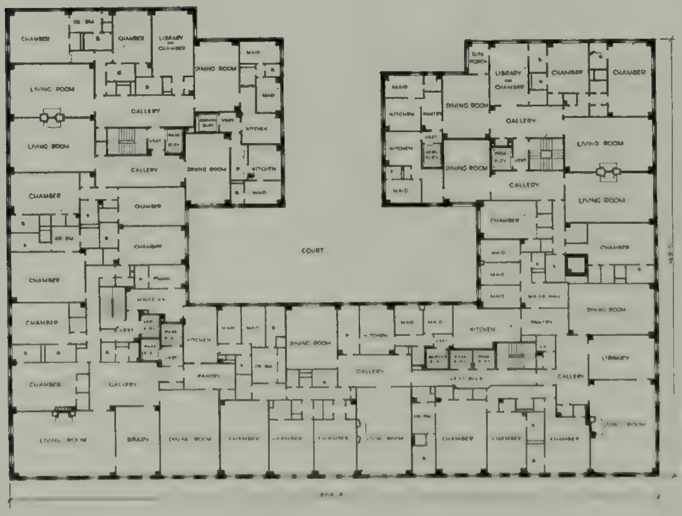


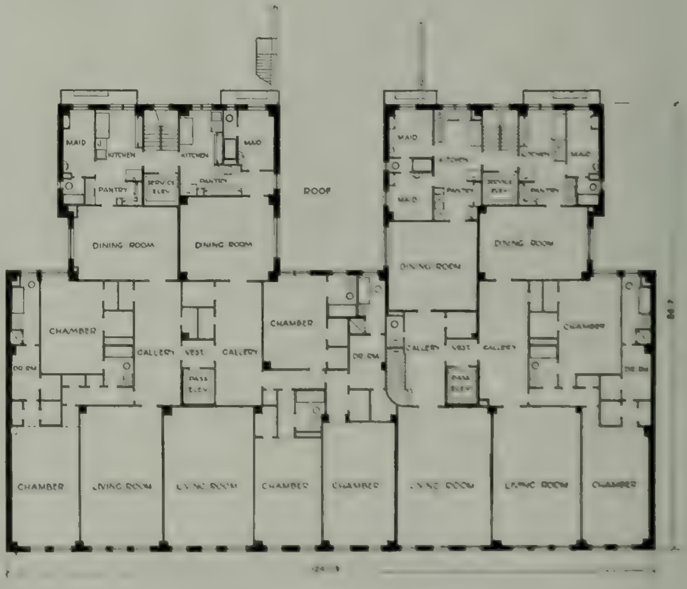
Wurts Bros.

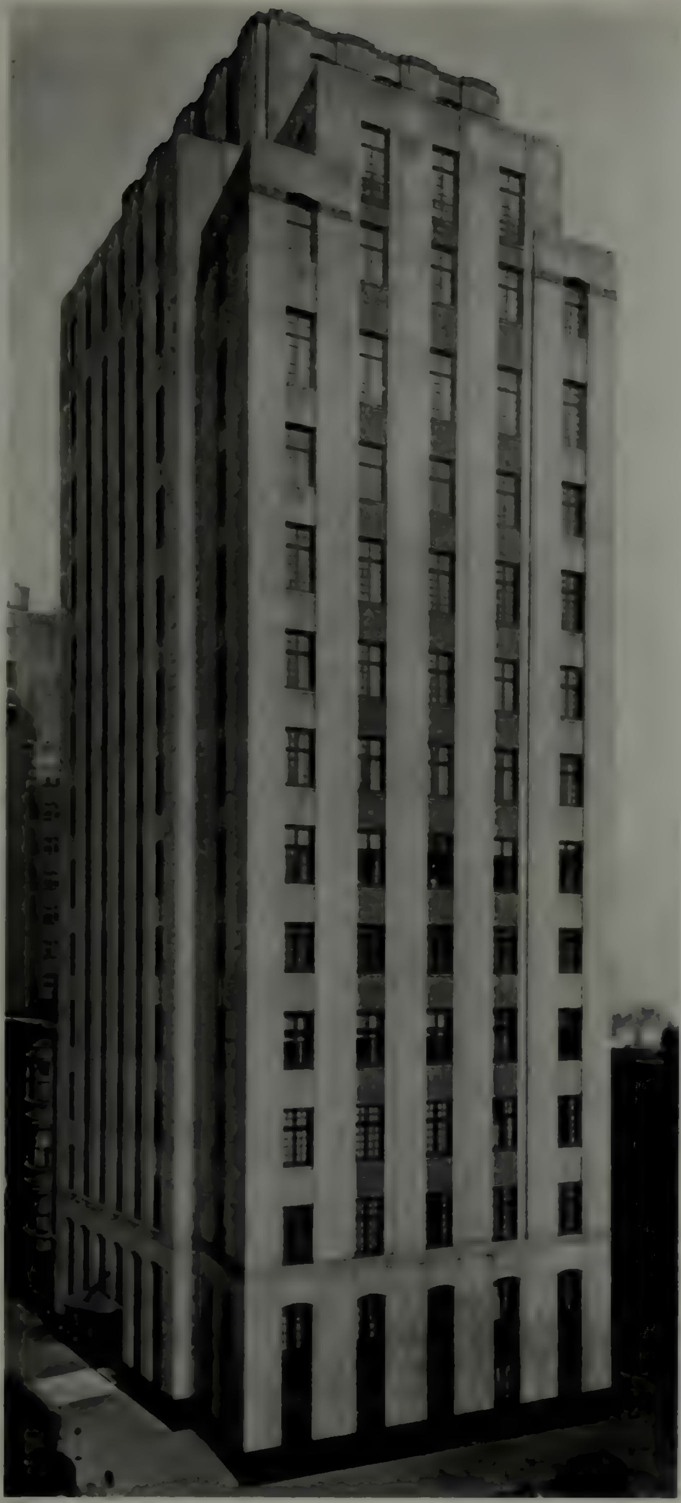
SAN REMO TOWERS, NEW YORK CITY

15 WEST 81st STREET, NEW YORK CITY

EMERY ROTH, ARCHITECT







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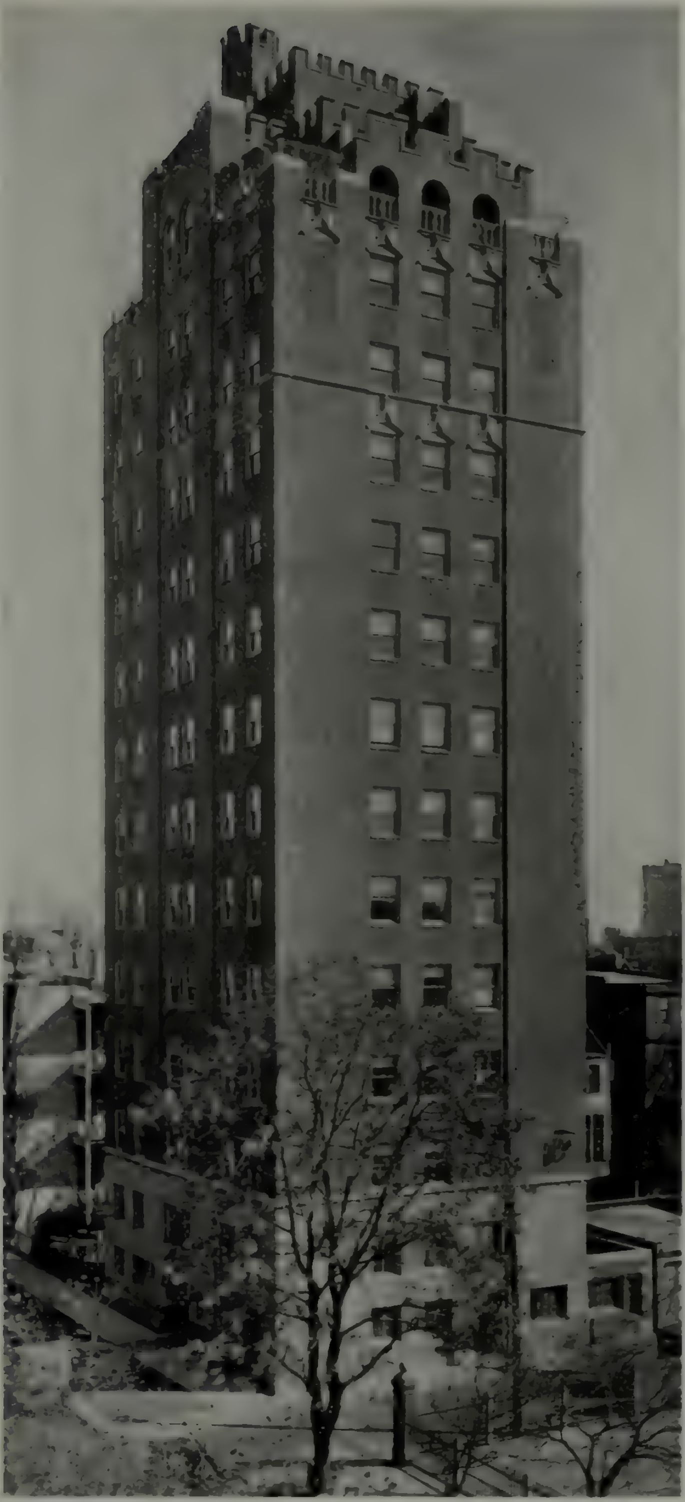
1301 ASTOR STREET
CHICAGO
GEORGE MAHER, ARCHITECT

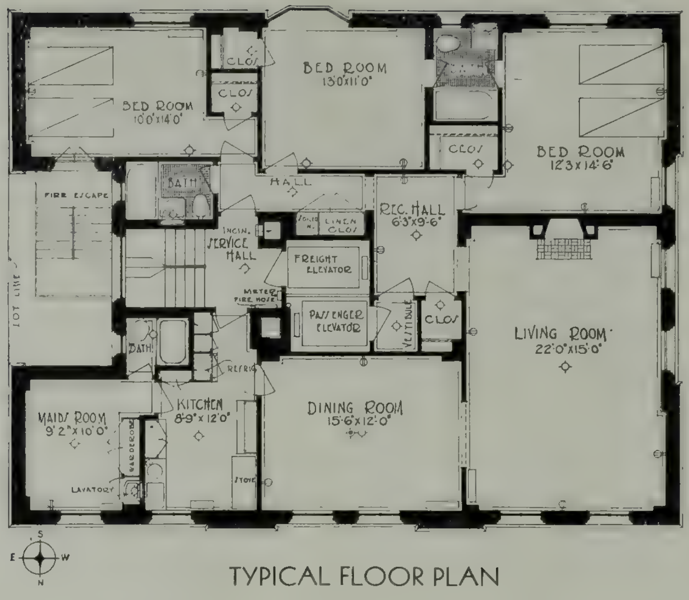


Chicago Architectural
Photographing Co.

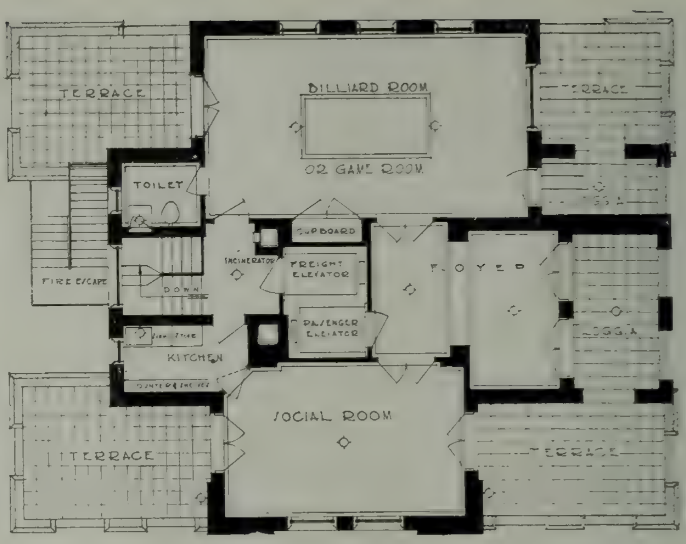
1321 EAST 56TH STREET
CHICAGO
HENRY K. HOLSMAN, ARCHITECT

"While plainly accepting the necessity for crowding each foot of valuable land to the limit, the form of individual design in New York does express, however, an expectation that the adjacent gaps are soon to be filled in with equally imposing units. Not so the typical Chicago high-class apartment, . . . its rigid bulk rises in full confidence that it is destined to remain permanently the only important edifice in its chosen block or district. We might well wish this could be the case. . . ."

Henry Wright



TYPICAL FLOOR PLAN



ROOF GARDEN PLAN

1321 EAST 56TH STREET, CHICAGO
HENRY K. HOLSMAN, ARCHITECT

Special problems: 50′ by 50′ lot, building laws requiring 10-yard lot line court sufficient to comply with building law as to ground coverage.

Type of renters: Cooperative owners.

Construction: Reinforced concrete; brick and tile curtain walls; face brick and stone trimmings on all sides.

Roof: Asphalt membrane, covered with cement concrete.

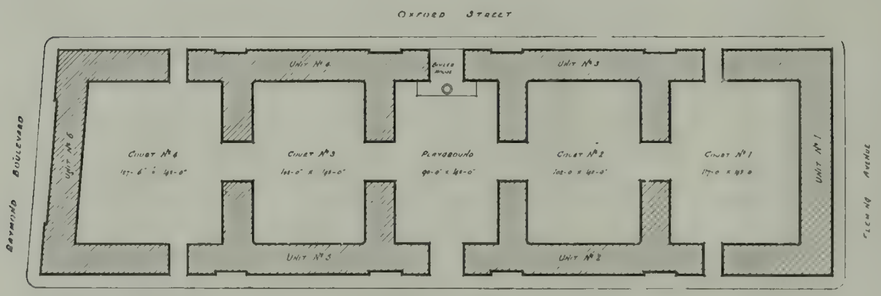
Floors: Linoleum on concrete in kitchens, cork tile in other rooms.

Birch finish marble window sills.

Exterior color: Purple brown brick at the base, changing gradually to reddish buff at the top.

Total cost: $173,500.

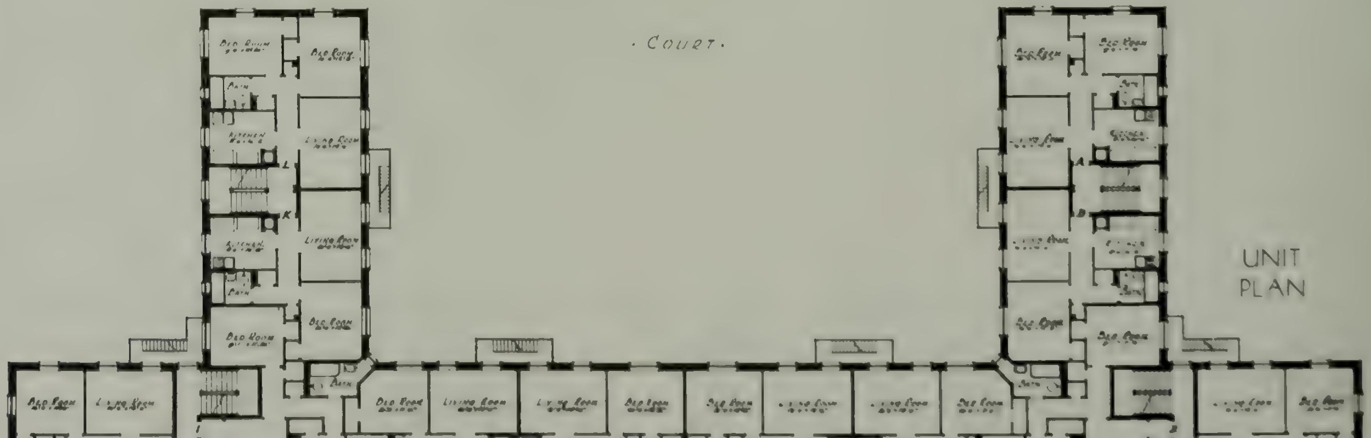
Cost per cubic foot: 62c.



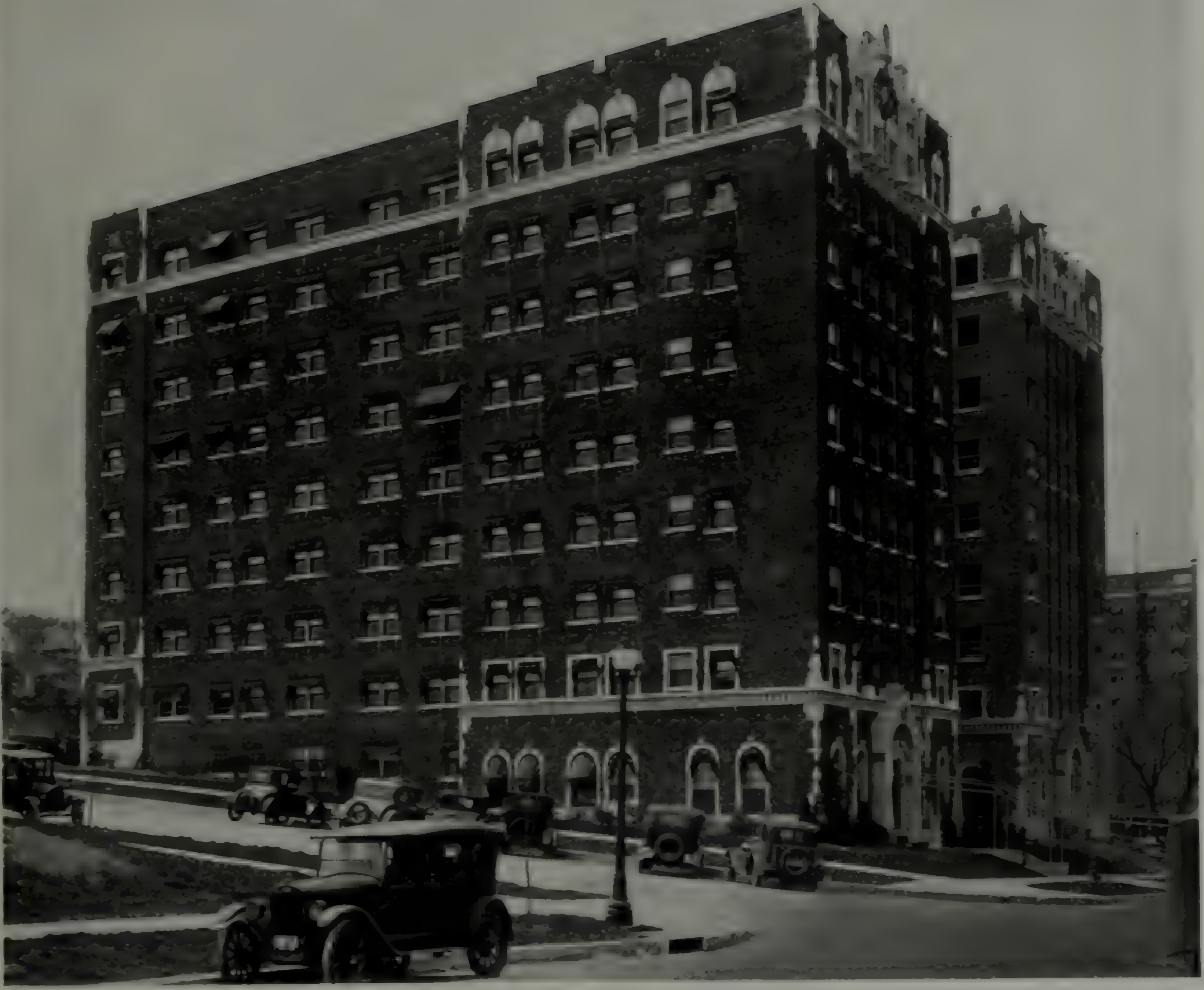
PLOT PLAN

CHELLIS AUSTIN APARTMENTS
NEWARK, N. J.
PRUDENTIAL INSURANCE COMPANY
OF AMERICA

EDMUND C. STOUT, ARCHITECT
VOORHEES, GMELIN & WALKER
CONSULTING ARCHITECTS

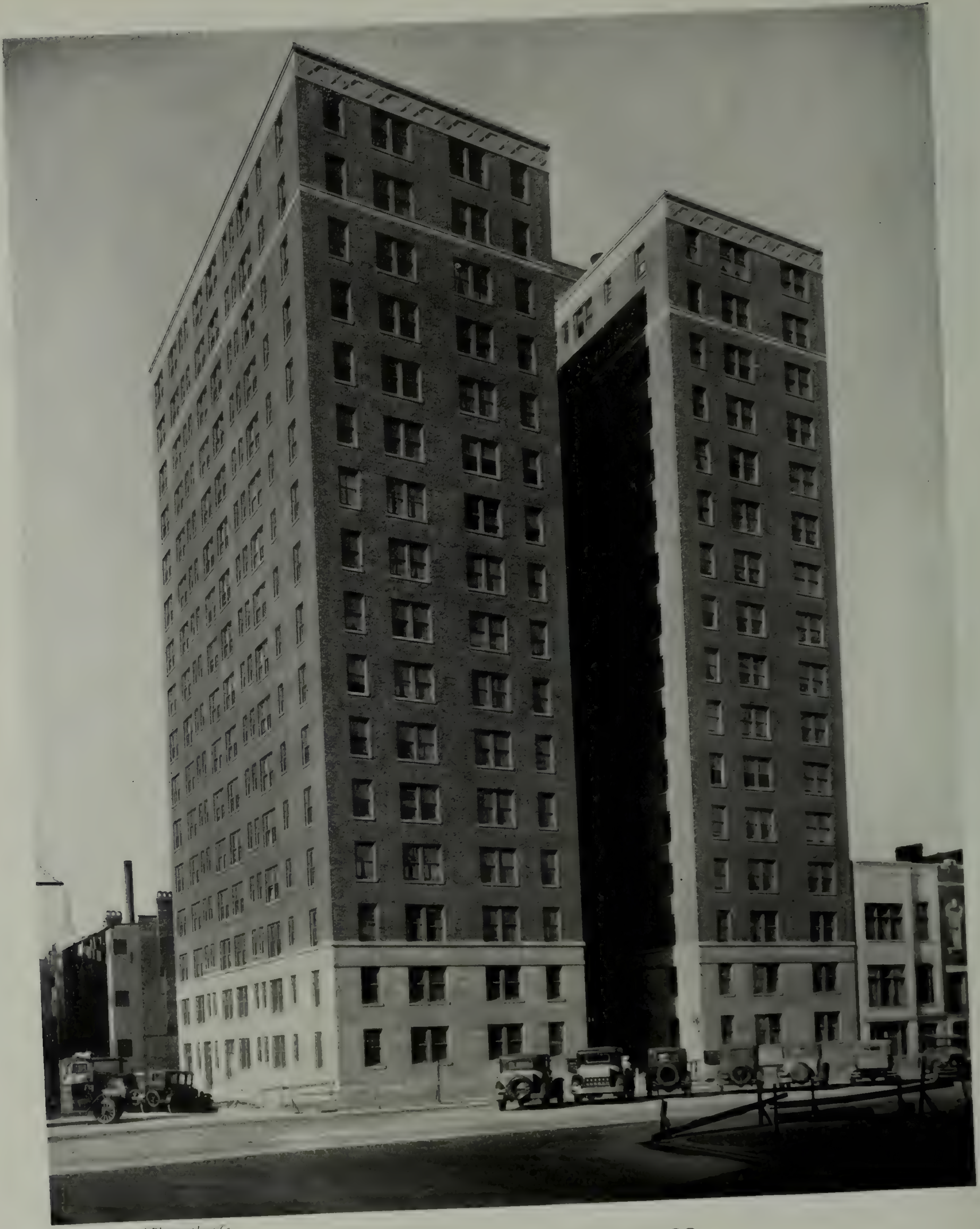


UNIT PLAN



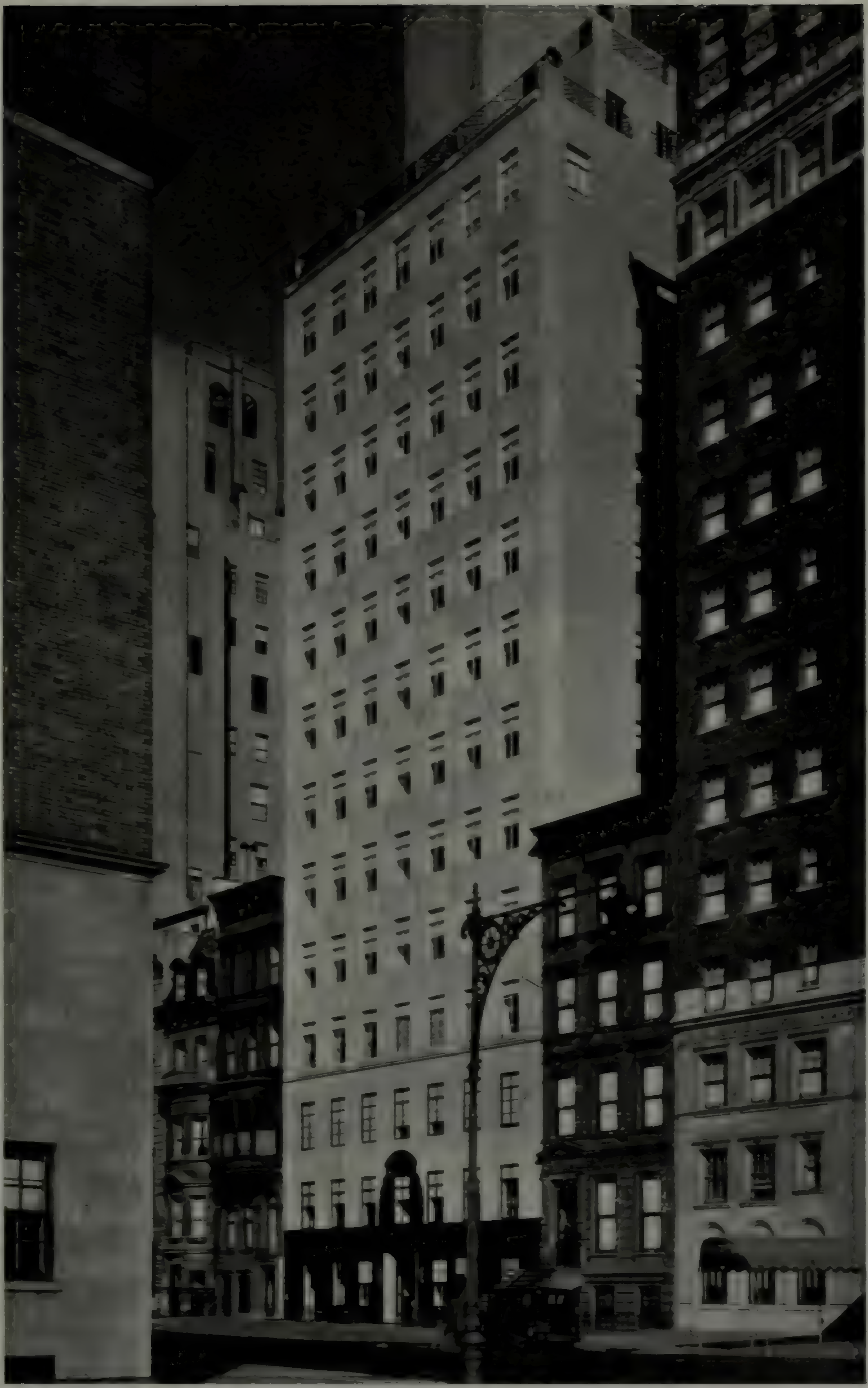
McCANLES APARTMENT BUILDING, KANSAS CITY, MISSOURI
WALTER A. BESECKE, ARCHITECT

Planning features: The building has no basement, the front of the first floor being used for lobby, clerk's office and manager's apartment, the rear for boiler room, locker room, laundry and mechanical equipment. All living rooms designed for corner locations.
Number of apartments: 65 units, all double apartments except one single and one studio on each floor.
Construction: Reinforced concrete frame, with 3″ concrete slab on hollow joists; ceilings, suspended metal lath; partitions, 3″ gypsum block, enclosure walls, brick with tile or haydite backing.
Color scheme: Exterior wall, variegated shades of mat-face brick running from brown to dark red; terra cotta trim, two tones of cream.
Building cost: $350,000.
Cost per cubic foot; 60c.



Chicago Architectural Photographing Co.

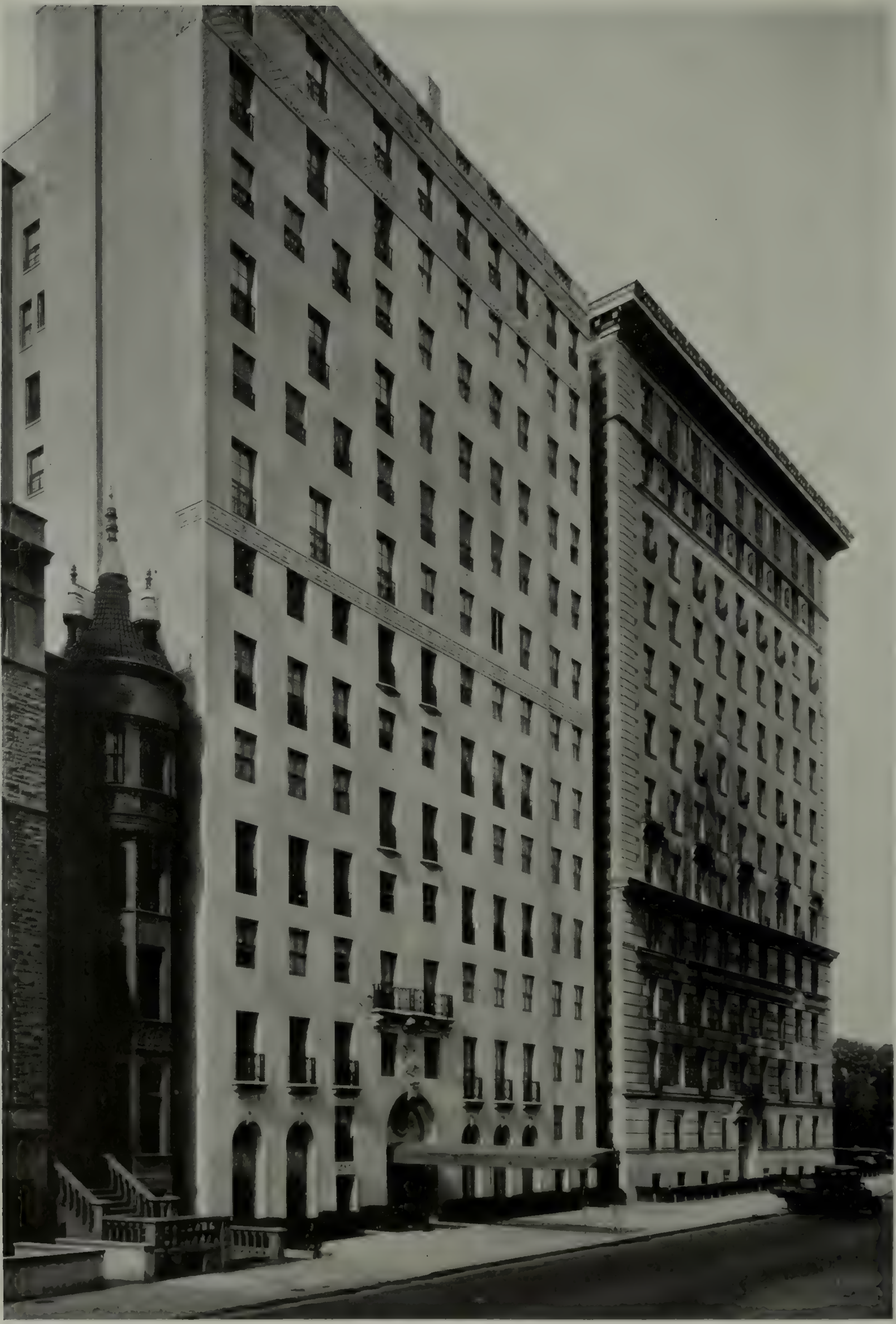
1100 NORTH LA SALLE STREET, CHICAGO
LOUIS GUENZEL, ARCHITECT



Wurts Bros.

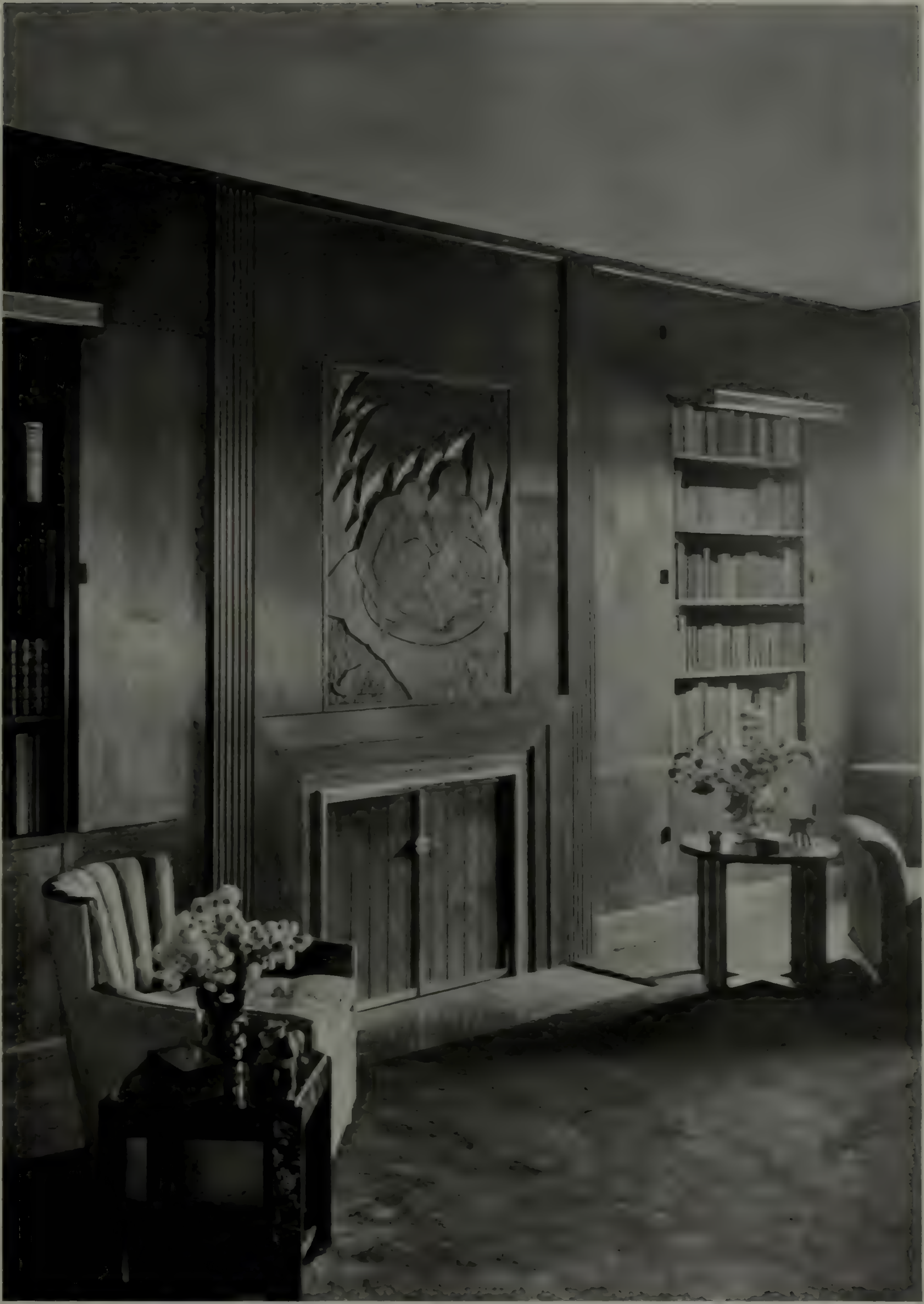
One apartment of 12 rooms to each floor. Total cost of $550,000. Cost per cubic foot about 73 cents.

21 EAST 79TH STREET, NEW YORK CITY
VAN WART AND WEIN, ARCHITECTS



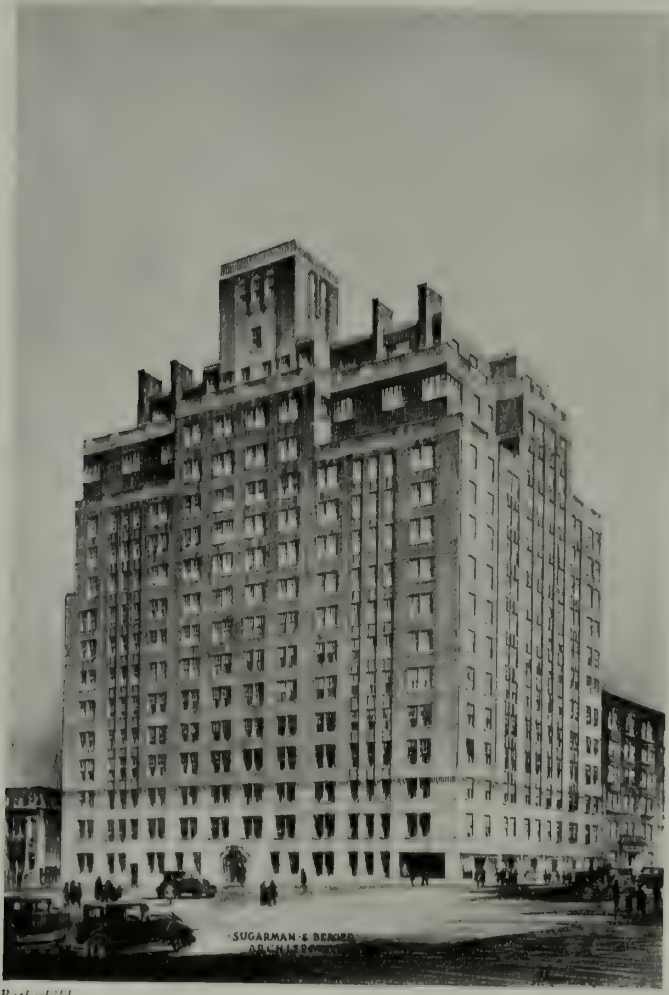
Wurts Bros.

4 EAST 72ND STREET, NEW YORK CITY
HOFFMAN AND GOLDSTONE, ARCHITECTS



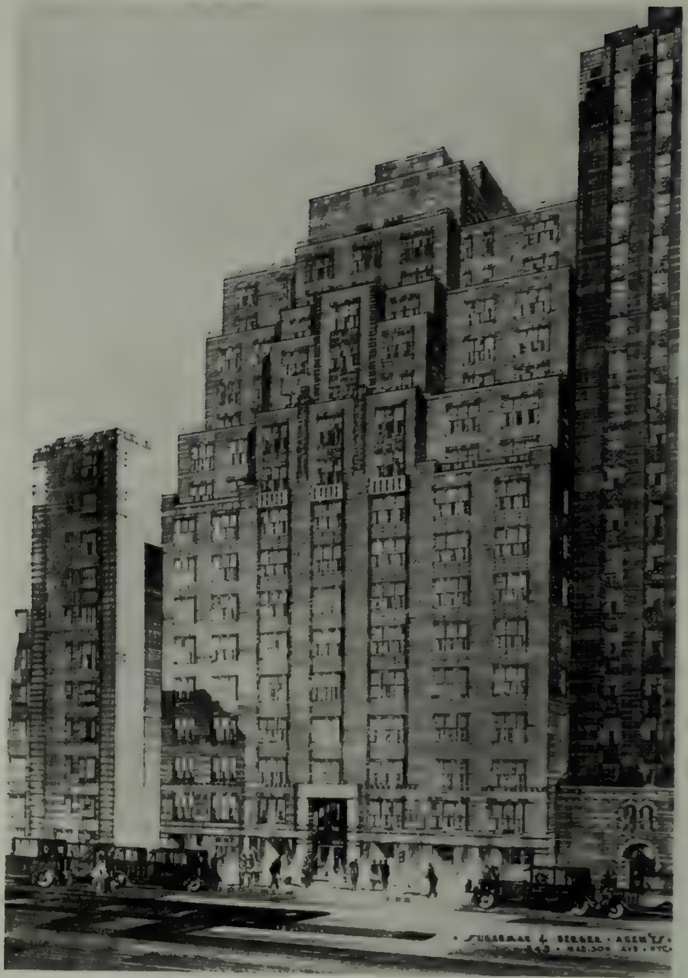
Gottscho

LIVING ROOM OF APARTMENT OF MAURICE S. BENJAMIN
211 CENTRAL PARK WEST, NEW YORK CITY
ELY JACQUES KAHN, ARCHITECT



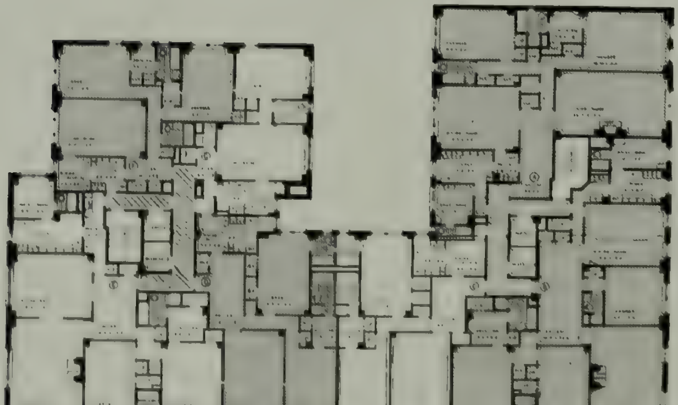
Rothschild

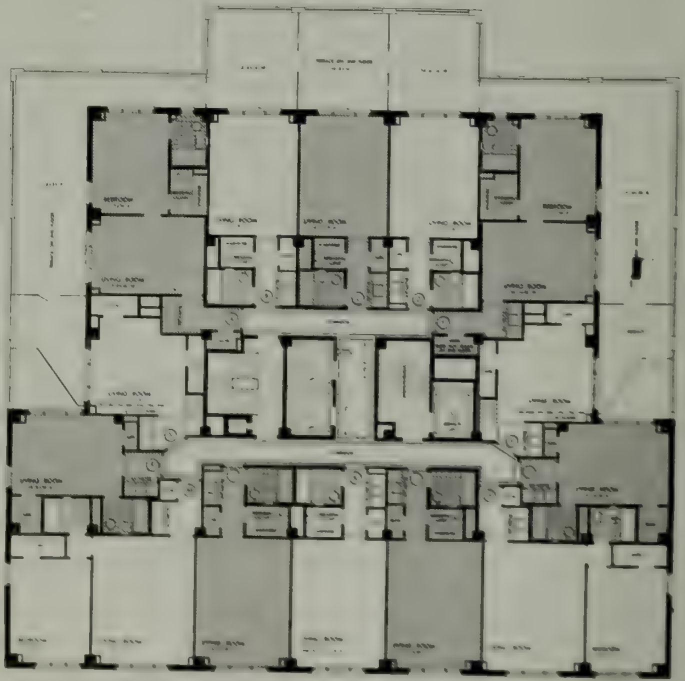
40 EAST 88TH STREET
NEW YORK CITY

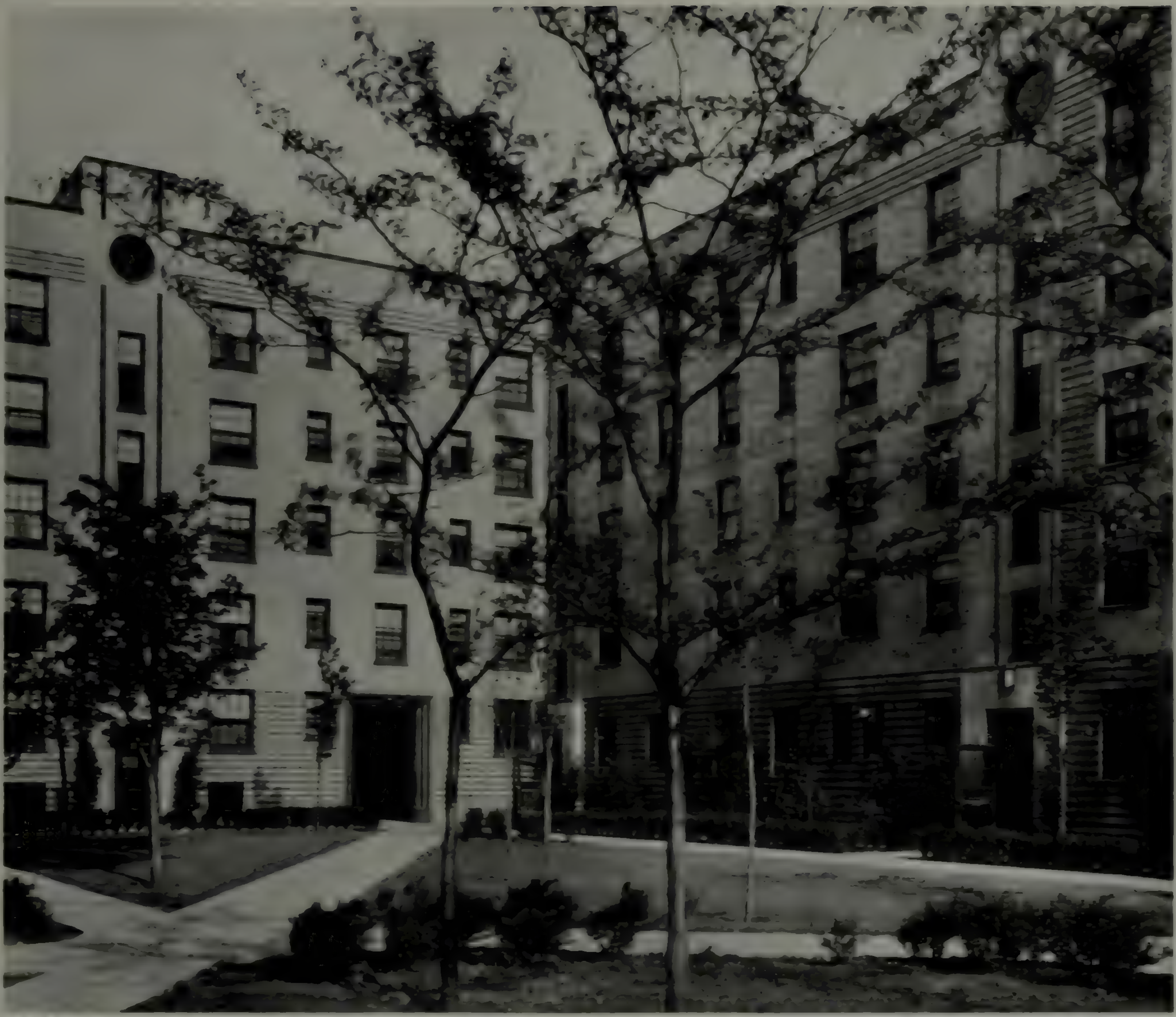


MAJOR LANE APARTMENT HOTEL
NEW YORK CITY

SUGARMAN AND BERGER, ARCHITECTS



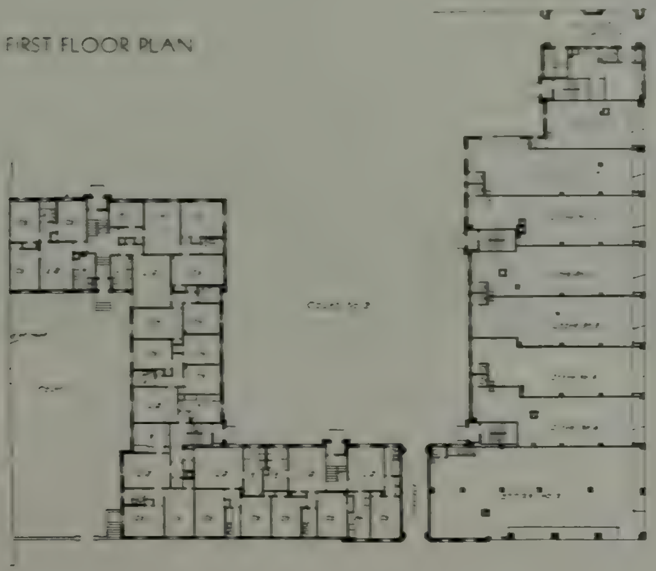


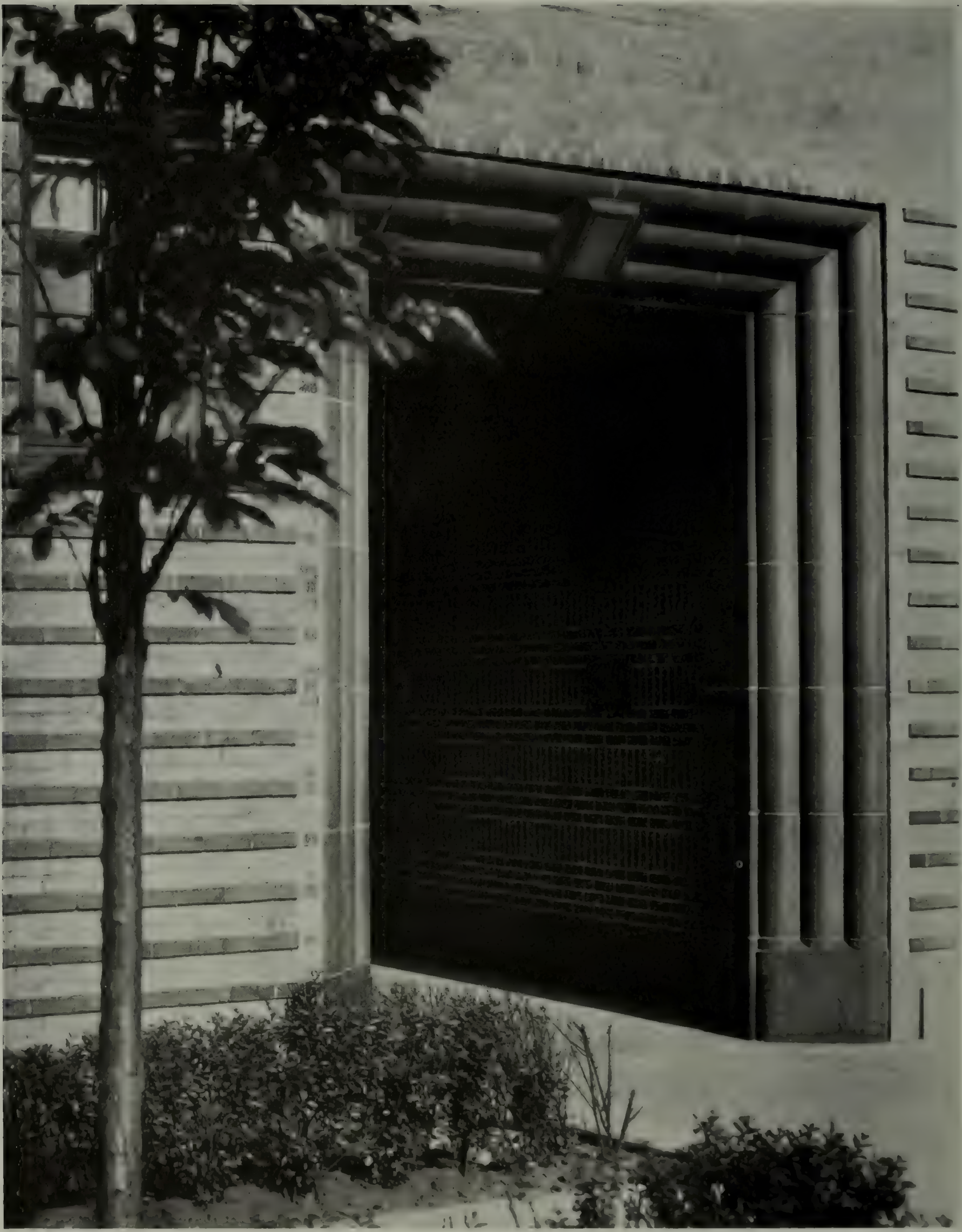


Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

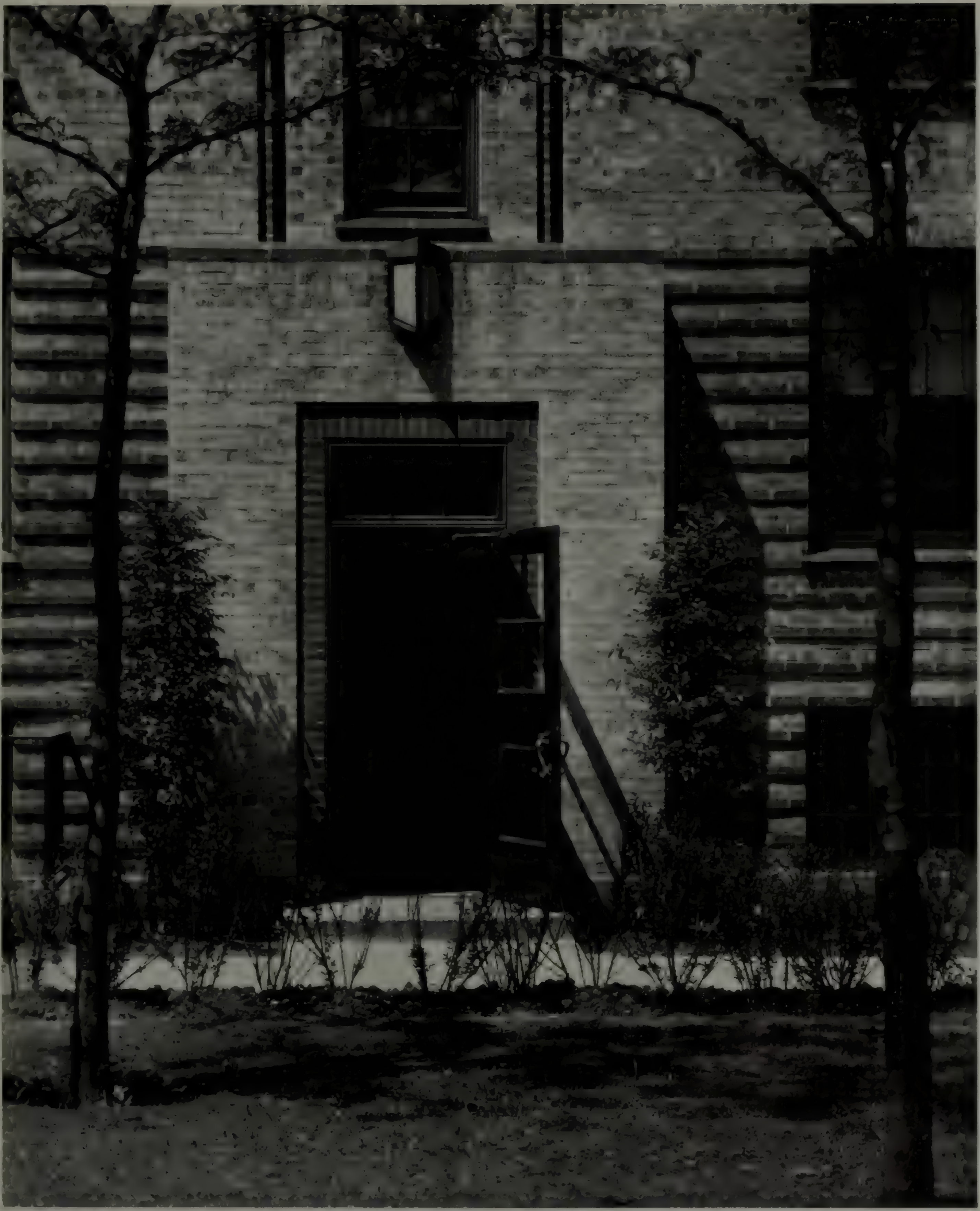
FIRST FLOOR PLAN





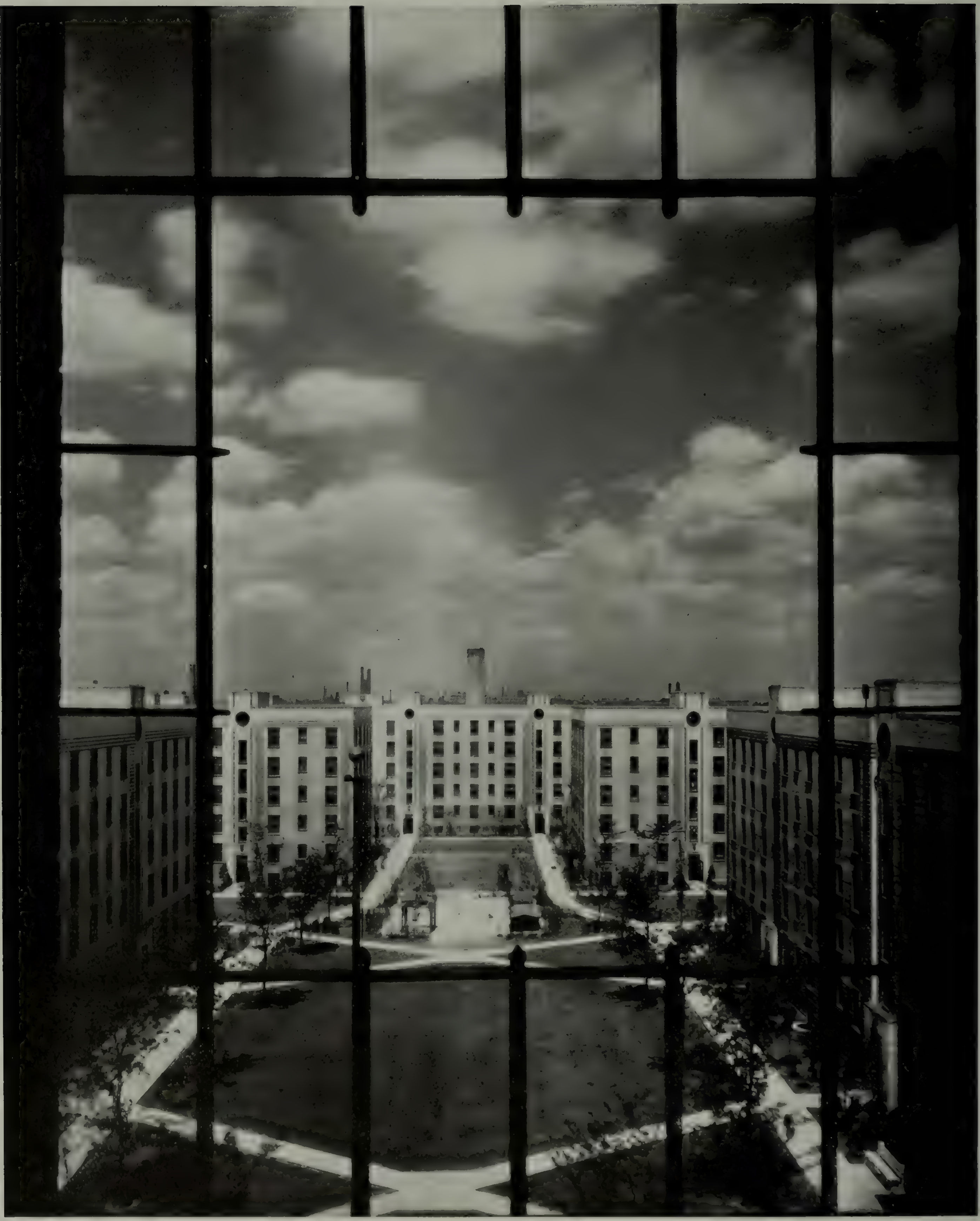
Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS



Hedrich-Blessing

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS



Hedrich-Blessing

"The present tendency is to limit interior court activities to the youngest children . . . Only sand piles, swings and other simple equipment need then be provided."

MICHIGAN BOULEVARD GARDENS, CHICAGO
E. H. KLABER AND E. A. GRUNSFELD, JR., ARCHITECTS

PLAY AREAS FOR APARTMENT HOUSES

By C. THEODORE LARSON

Why should children have to create their own playgrounds, unsupervised? . . . Proper provision of play and recreation areas for children and adults increases the rentability of apartments.

Browning

Along with the apartment house, the playground has become significant for its new social and economic importance in the life of the community. The virtues of regulated play are recognized: children are kept off the streets, to the great relief of both mothers and motorists, and with the guidance of play supervisors, the proper spirit of comradeship and mutual co-operation can be developed in the youngsters. At the same time, centralized care of children during the day permits many women, who find it necessary to augment the family income under the new economic division of labor, to go into industries and business.

Adult social activities also must be considered as an integral part of the community recreational program. The problem of what to do with enforced leisure stands out most strikingly in present conditions of business depression and unemployment.* For the future the need of providing adequate facilities for recreation will be of even greater importance as machines continue to supplant hand labor. Clearly, here is a challenge to the foresighted planner of communities and dwellings.

Some efforts in this direction are already apparent. Several large apartment developments in New York, Newark and Chicago have provided play space in the interior courts. Other block interior playgrounds have been attempted successfully in Detroit, Duluth, Evansville and Kansas City. Roofs likewise are being utilized for recreation. A new apartment house at 1 Beekman Place, New York City, designed by Sloan and Robertson, architects, with Corbett, Harrison and MacMurray as consulting architects, has squash courts, recreational parlors, billiard room, swimming pool, gymnasium, and community accommodations on the three basement floors. It should be noted that this apartment house has rented well.

TRENDS IN PLAY AREAS

Interior courts: Many planners have experimented with the scheme of a common space in the middle of a block development. The enclosure of apartments obviously eliminates the hazard of automobiles, but if the block depth is shallow, there will be complaints of the noise of the children as well as a sacrifice of necessary sunlight. Unless the development is sufficiently large to support a play leader, the children will not have a fair chance for play and the proper maintenance will be lacking. With a large square block having the interior space used for a common garden or park—a principle effectively applied in English town planning—these objections are largely overcome.

The present tendency is to limit interior court activities to the youngest children and to send the older boys and girls to a neighborhood playfield. Only sand piles, swings and other simple equipment need then be provided.

At Sunnyside Gardens in New York an interior court plan was designed with the central space as a basketball and cinder playfield for the older children, a tennis court at one side for adults, and a sand pile and wading pool at the other for the toddlers. As Clarence S. Stein, the architect, points out, the arrangement was almost 100% wrong. The older children were too noisy, the single tennis court was insufficient and expensive to maintain by itself, and mothers were afraid the youngsters would drown in the pool. A playfield now serves the community and the interior courts of the new buildings are developed as gardens with a sand pile and sheltering pergola reserved for the smallest children.

Nurseries and interior playrooms: Indoor play space, for use when the weather is bad, is provided in the larger apartment developments as an adjunct to the court playgrounds. In the Chellis Austin Apartments in Newark, designed by Edmund C. Stout, architect and engineer, there will be a center court playground, surrounded by a 10′ wire guard

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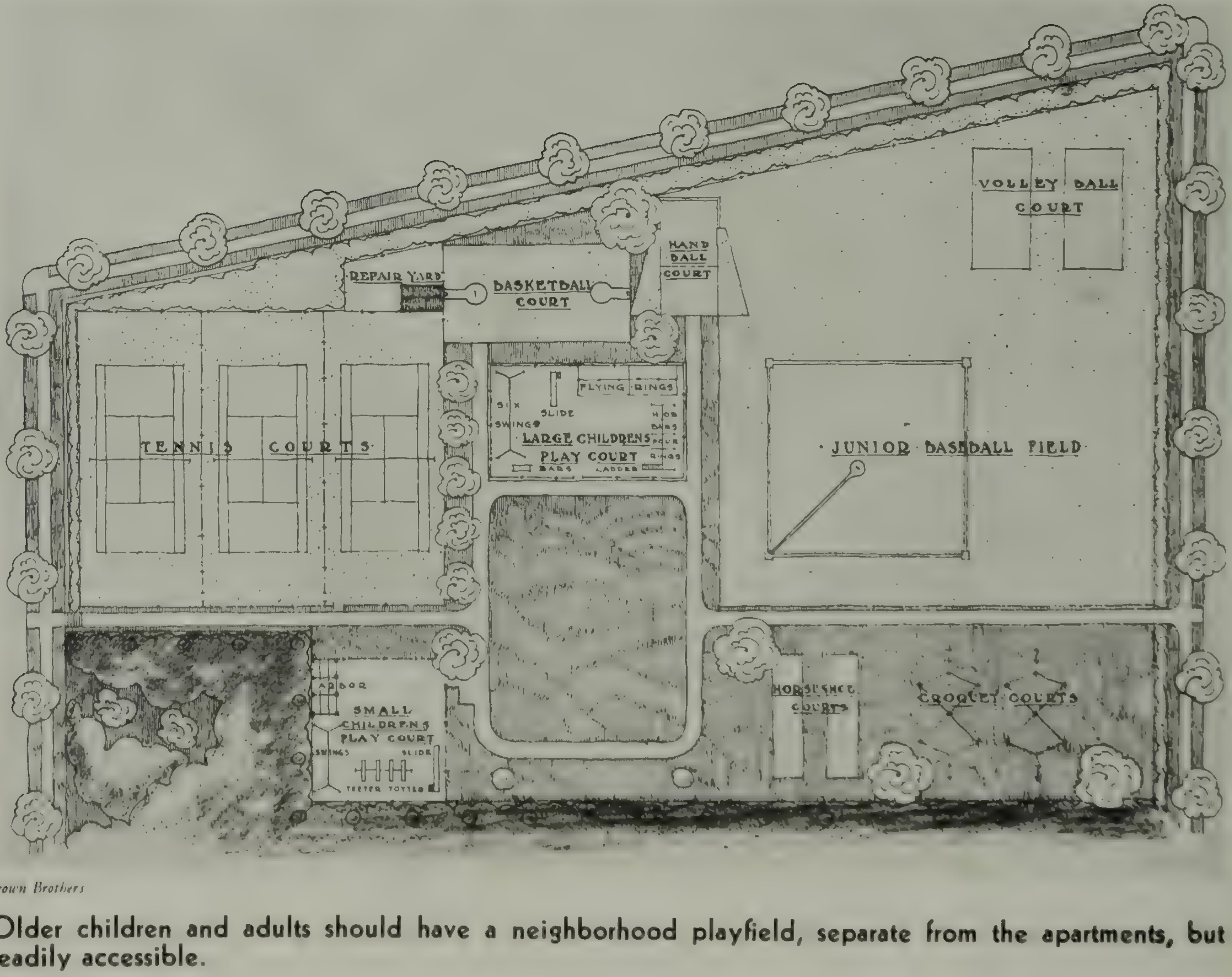
*Cincinnati has established a municipal playground next to a state-city employment bureau. Here, in good weather, the unemployed men play baseball, horseshoes and volley ball; in bad weather they enjoy checkers, cards and target board.



Brown Brothers

Older children and adults should have a neighborhood playfield, separate from the apartments, but readily accessible.

SUNNYSIDE GARDENS, LONG ISLAND, NEW YORK
CITY HOUSING CORPORATION
HENRY WRIGHT AND CLARENCE S. STEIN, ARCHITECTS

and containing slides, rings and the like; adjacent, in a wing, will be an indoor playroom and in another wing a day nursery where tenants who work can leave their children in the care of a competent person at a nominal cost. A similar arrangement is seen in the Paul Lawrence Dunbar Apartments, designed by Andrew J. Thomas, architect. The playground, which can be seen from most of the garden windows, measures 48′ by 111′, and is equipped with seesaws, swings, sand piles and other apparatus; an indoor game room, toilets for the children and a day nursery with a trained nurse in attendance are also provided. In the Marshall Field apartments in Chicago, also designed by Mr. Thomas, the ten apartment buildings, accommodating 648 families, are grouped round a large interior garden, 800′ long, with a playground measuring 40′ by 145′ in the center and separated from the rest of the garden by an iron railing; adjoining the playground is an interior playroom, 30′ by 60′, fully equipped to serve as a miniature gymnasium.*

Community playfields: Recreation specialists and city planners generally agree that, where possible, older children and adults should have a neighborhood playfield, separate from the apartments but readily accessible. The apartment play spaces are then reserved for the smaller children and the less active adults.

The logical place for the neighborhood playground is the *school*, theoretically located to be most accessible to the children served by it. Many economies can be effected by arranging the facilities of the school building to serve both the school and the playground, thus avoiding duplication of equipment. Play leaders are more easily provided and the grounds can be kept open after school hours and on Saturdays and holidays.

At the Sunnyside development the community playfield is maintained through fees paid by those using the grounds. This is a charge additional to the taxes paid by the citizens—an important consideration in determining the advisability of a neighborhood playfield when not provided by the local civic administration. Whether city-controlled or community-supported, it is imperative that provision be made in the financial set-up for maintenance charges.

Euro Photo Service

This roof has been developed for adult recreation as well as children's play. Movies, dances, volley ball, checkers and dominoes are popular, and the cool summer breezes can be enjoyed.

LAVANSBURG FOUNDATION APARTMENTS
GOERCK STREET, NEW YORK CITY

Roof playgrounds: Of increasing importance is the use of apartment roofs for recreation. On the old type of roof this was not practical—the clutter of tanks, clothes-drying space, dumbwaiter shafts, plumbing pipes, chimneys and lightwells left no unbroken play space for the children. The roof had to be strengthened, adding to the construction costs, and there was always the objection that the small boys would inevitably climb over the coping or any railing that might be put up, and if any accident resulted the owner would be faced with large claims for damages.

Today roof playgrounds are most numerous on school buildings where they are used as outdoor gymnasiums for physical training classes. According to Lee F. Hanmer, writing in "Regional Survey of New York and Its Environs," Vol. V, page 108, the practical usefulness of the roof playground outside of school hours is limited by construction and administration. Patronage is small when one has to climb to the roof top, and school authorities are reluctant to keep the buildings open at night.

Comparatively few apartment developments have yet utilized the roofs for recreation. Of these, the garden apartments built by the Amalgamated Housing Corporation at East Grand and Sheriff Streets, New York City, and designed by Springsteen and Goldhammer, architects, will have a part of the roof area developed as a roof garden, not for games or sports but for people to sit and enjoy the view, the sunshine and the fresh air. Automatic elevators will enable mothers to take baby carriages out on the roof. The roof of the Lavansburg Foundation Apartments, 124-142 Goerck Street, New York City, has also been developed for adult recreation as well as children's play: movies, dances, volley ball, checkers and dominoes are popular, and the cool summer breezes can be enjoyed.

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*A very useful analysis of nursery and kindergarten requirements, with a checking list of building standards, equipment and play apparatus, was published in the March 1930 Apartment House number of THE RECORD ("Apartment Design to Meet Family Needs," by Robert L. Davison, pages 270-274).

Recreation authorities agree that the apartment roof should be used chiefly for social purposes rather than for sports. The present trend seems to indicate this development as most practical and desirable. Lawrence Veiller, editor of *Housing*, suggests that the roof be equipped with glass enclosures so that the ultraviolet rays can be utilized for sun bathing the year round. Benches should be provided for this purpose and outer walls safeguarded with railings so designed that children will be discouraged from playing on them or attempting to scale them. Mr. Veiller suggests also that provision be made for band concerts to be given by the tenants preferably.

Difficulties of design and administration should not prevent continued study of the play and recreation possibilities of roofs. When used for sports, the roofs should not only be properly surfaced but should be absolutely soundproof. A wire cage completely inclosing the play space will prevent balls and other objects being thrown off into the streets.

Outer walls should be safeguarded with railings so designed that children will be discouraged from attempting to scale them.

ROOF, SUNNYSIDE APARTMENTS, NEW YORK CITY HOUSING CORPORATION

Van Anda

This interior court playground measures 48′ by 111′. It is equipped with seesaws, swings, sand piles and other apparatus. An indoor game room, washrooms for the children and a day nursery with a trained nurse in attendance are also provided.

PAUL LAWRENCE DUNBAR APARTMENTS, NEW YORK CITY
ANDREW J. THOMAS, ARCHITECT

PLANNING

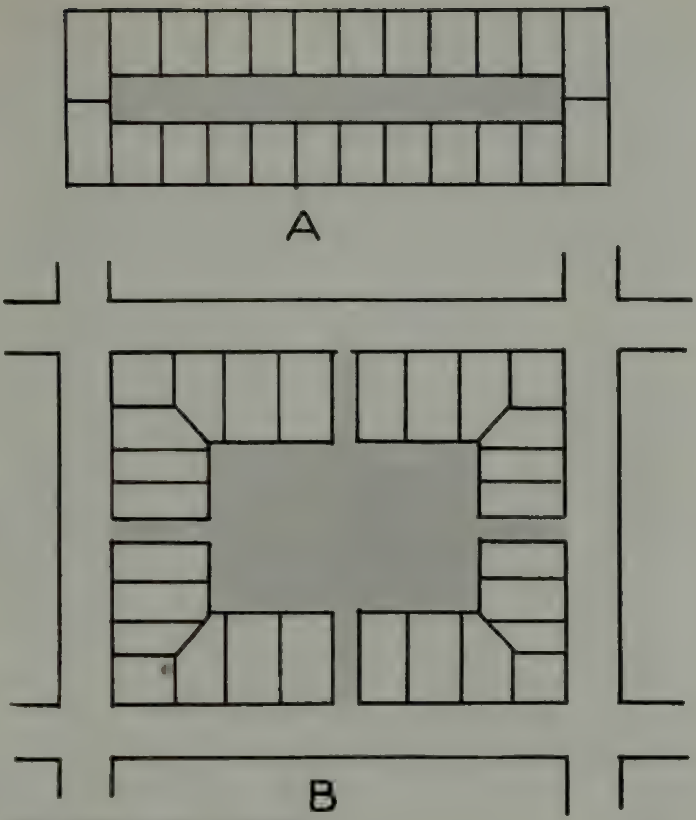
In the layout of play spaces certain fundamental considerations must be kept in mind:

Streets: Traffic barriers should be avoided. The use of many a playground has been seriously curtailed because of a heavy barrage of street traffic between the playfield and the homes of the children. With the development of arterial highways for fast automobile traffic certain areas are naturally segregated; playfields should serve only those living within the segregated area so that there will be no necessity to cross the traffic barrier. Playgrounds located in apartment courts open on one side to a street have been found hazardous because of the likelihood of children dashing blindly out after stray balls.

Sunlight and air: Except in a few instances, as in the case of an outdoor rink for ice skating where shade will keep the ice from thawing too rapidly, the play space should have as much sunlight as can be secured. Ample "lung-space" should be allotted. For *playgrounds*, limited to use by children under 15 years of age, the New York Regional Plan studies recommend 100 square feet for each child at play. For *playfields*, given over to such games as baseball, hockey, cricket, football, volley ball and tennis, about 1000 square feet for each player is considered satisfactory.

Noise: Many tenants object to the noise made in the excitement of a game. Provision must of course be made to overcome this objection. A minimum separation of 60 feet between the play space and the nearest apartment is recommended. Accessibility is desirable, but if the apartment development is large enough and ample space is available, a playfield for older boys and girls and adults may be located at a greater distance away. The playground for children of the preschool age, who are comparatively quiet, should be kept nearer the apartments. Suitable planting of shrubbery and trees will do much to absorb sounds. Adults and older children will walk or ride a longer distance, up to a maximum effective radius of a half mile, to reach a neighborhood playfield. Smaller children are unable to go far unassisted; furthermore, for the peace of mind of their mothers, they should be given space where they can be easily observed from apartment windows, unless nursery accommodations are provided.

Paths: Most playgrounds and playfields require footpaths for players to reach certain areas without crossing spaces in active use. When space is valuable, paths should be as few and direct as possible; they can serve to advantage as natural divisions for the different game areas. They are usually of concrete or gravel. Main paths, near the entrance, should be wide, with the secondary paths narrow.



Courtesy of the Regional Survey of New York

Where the block depth is shallow (plan A) the interior court will lack sufficient sunlight and openness. Noise will also be found objectionable by tenants. With a large square block (plan B) having the interior space as a common park—a principle applied in English town planning—these objections are largely overcome.

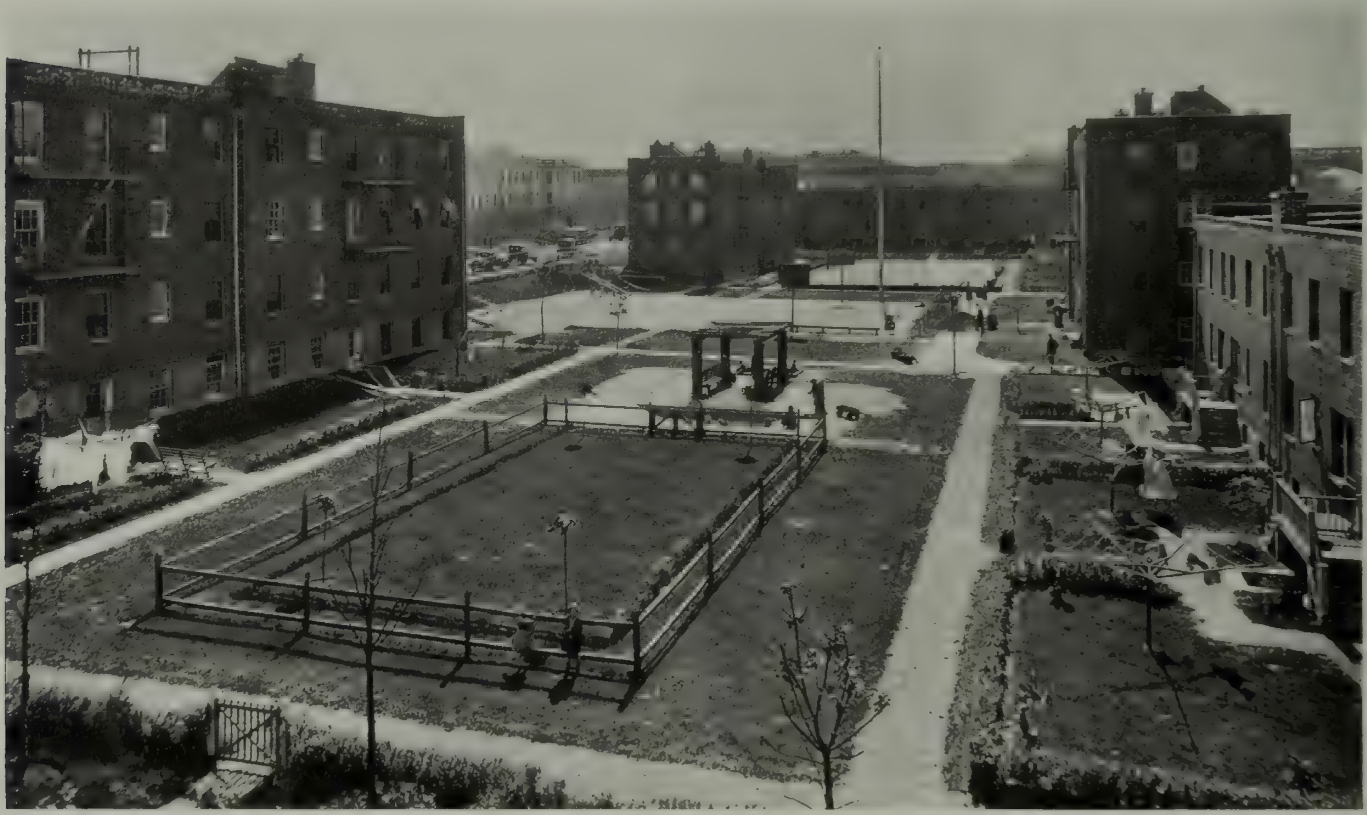
Fences: The children's playground should be fenced for reasons of safety. Property and passers-by are protected against batted balls; outside distractions, as well as trespassing on neighboring property, are eliminated. If the fence is set inside the property line a few feet, plantings will make a good sound screen; a second and lower fence may sometimes be necessary to protect the plantings. The National Recreation Association suggests either No. 6 or No. 9 gauge wire with a 2″ mesh and a height of 5′ to 8′, depending on protection required.

Lighting: Night illumination offers increased use of play areas, especially for those persons whose working hours allow little recreation during the day. Position of lights should be determined early so that conduits for wires may be laid before surfacing is completed.

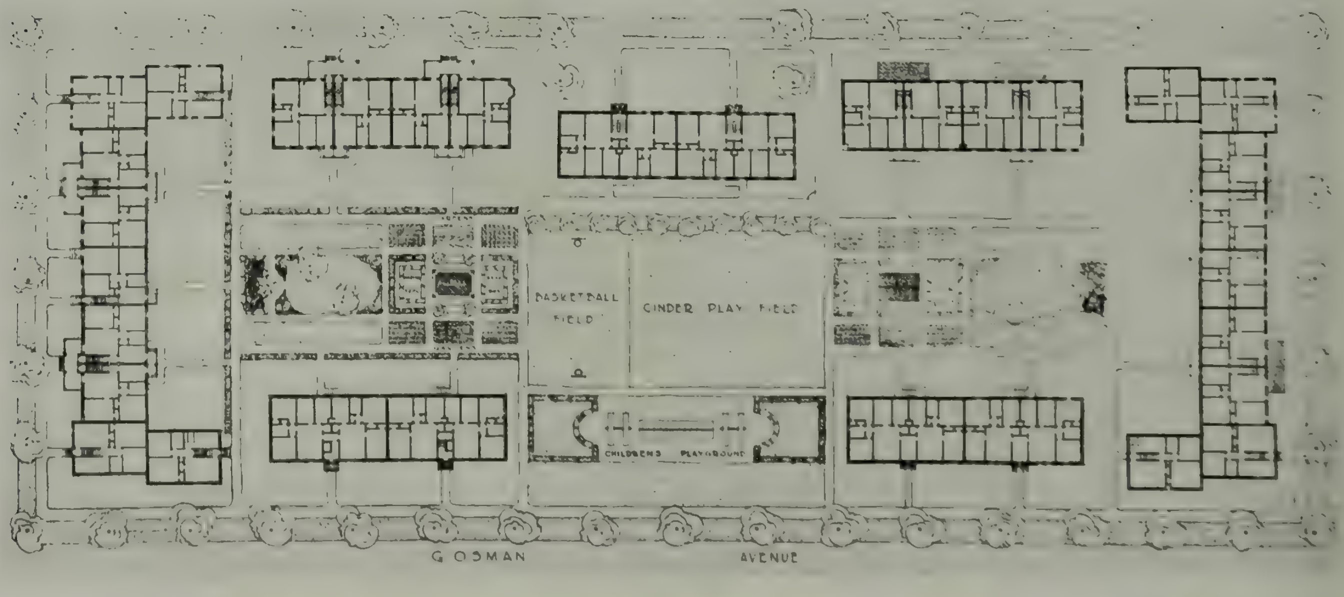
Drainage and surfacing: Level areas are best for play purposes. Terracing will secure maximum use of an uneven topography. A gradual slope of 6″ to a hundred feet is satisfactory for the removal of water. Playgrounds should be porous for drainage, firm when wet and dustless when dry. Turf is best for small children's play but not always possible to maintain on a small, much-used area.

Torpedo sand or gravel makes a good top dressing for a clay or heavy loam soil. According to the National Recreation Association, cinders should be avoided. Concrete and brick are too hard on the children's feet.

Maintenance: Playgrounds *must* be kept in order—and this entails expense. Unless provision is made in the financial set-up of the building project to support a play leader and to maintain the necessary upkeep of grounds and equipment, the playground may develop into a nuisance, with the older boys bullying the younger children and with the whole area looking littered and disorderly. Maintenance must be considered in determining the schedule of rentals—nor should it be overlooked that well-planned and well-kept play and recreation space will add much to the rentability of the apartments.



Brown Brothers



Experience has shown that for interior court playgrounds older children are too noisy. A single tennis court (shown at the far end of this court) is insufficient and expensive to maintain by itself. The sand box and sheltering pergola, however, are desirable for the youngsters whose mothers wish to keep them under surveillance.

SUNNYSIDE APARTMENTS, LONG ISLAND, NEW YORK
HENRY WRIGHT AND CLARENCE S. STEIN, ARCHITECTS

FACILITIES AND EQUIPMENT*

Wading pool: Despite occasional objections on the score of children becoming unnecessarily wet, the wading pool is extremely popular in its appeal, especially when it can be utilized also as a place to sail small boats. (Consider the hundreds of children—and adults—who find the pools in Central Park in New York, or the Luxembourg gardens in Paris, so attractive for sailing their toy yachts.) A concrete walk several feet wide surrounding the pool is very desirable; the walk should slope toward drains placed so that the area around pool will not become muddy. A curb 4″ to 6″ wide will prevent water draining into pool. Children should enter at shallow end through a foot bath provided with continuously flowing water to prevent dirt being tracked into the pool. Provide benches for mothers, and one or more sand courts with a trellis, on south side of pool. Frequently the wading pool is placed alongside the swimming pool.†

Dimensions: Size of wading pool depends on number of children served. Pools are usually circular or rectangular (the cheapest to build) in shape, although an irregular naturalistic contour offers interesting possibilities for play. Depth varies from a few inches at shallow end to 12″ or 18″ at deepest point. Some pools are as deep as 24″ or 30″ in order that the children may swim, but these require constant supervision.

Construction: A concrete pool should be laid on a base of broken stone or cinders so that ground or surface water will be drained away without danger of frost cracking the concrete. Thickness of walls and bottom varies from 4″ to 8″. Seal expansion joints with asphalt or tar. Water can be brought into pool through a pipe or fountain in the center or through a grating in the floor. Provide overflow opposite inlet, arranged so that prevailing wind is with the currents toward the overflow, thus draining off dust and oily surface water. Place outlet drain, covered with grating, at deepest point. Provide sand traps or catch basins so that pipes will not become clogged. A colored cement finish for pool and surrounding walk is desirable in order to reduce the glare of the sun. Floor of pool, curb and walks should be slightly roughened to prevent slipping. Side walls should be as smooth as possible, with corners and intersections rounded to facilitate cleaning.

The sand box offers splendid opportunities for creative modeling as well as general play.

SUNNYSIDE APARTMENTS, NEW YORK
HENRY WRIGHT AND C. S. STEIN, ARCHITECTS

Sand box: Provide two boxes, if possible, or partition a big box into two sections so that one, with sand kept moist, can be used for modeling and the other, with the sand warm and dry, can be reserved for the very small children for general play. Shade from trees, building, trellis or awning is desirable, but the sun should reach the box for several hours each day. Benches for mothers should be provided.

Dimensions: Variable, from 6′ x 10′ to 12′ x 20′, with 3′ to 5′ clearance on each side for play. Walls 12″ to 15″ in height, with a shelf 10″ or 12″ wide round top or at least two sides to be used as a seat and also for modeling.

Construction: Concrete or wood, preferably zinc-lined. If soil is porous, no special base is needed; remove grass before putting in sand. Heavy clay surface or concrete bottom requires provision for drainage. Cover of wire mesh on a lightweight frame, or a sectional lid with bored holes to admit air, should be provided to guard the box when not in use.

Maintenance: 12″ to 15″ of sand, changed twice a season or oftener. Rake thoroughly for exposure to sun and air each day.

Slide: Stairway not too steep and limited in width to accommodate only one child at a time. Handrail and a platform at top. Chute curved at bottom to break force of landing. Place in shade, since the chute, especially if of steel, will become too hot for comfortable play if exposed to the sun.

Dimensions: 16′ slide, with starting platform 8′ above ground, for older children; 12′ and 8′ slides for younger children. Approximate use space requirements, 12′ x 30′ for the large slide; 20′ x 45′ for a gang slide; 20′ x 30′ for a racer slide.

Construction: Chute of steel or rock maple. Sand, shavings or sawdust may be placed in a box 5′ x 2′ sunk into the ground at base of chute. Slide supports are usually set in concrete although portable slides may be used.

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*For the following recommendations and suggestions we wish to acknowledge indebtedness to the National Recreation Association. This association has prepared a book, *Play Areas, Their Design and Equipment* (published by A. S. Barnes and Co., New York) containing much valuable data.

†For analysis of the design and construction of swimming pools, consult The Architectural Record, January 1929, pages 67-87.

The slide is popular with children of all ages. Extensive use demands best construction and materials.

SUNNYSIDE PLAYFIELD, NEW YORK

Van Anda

Toilet facilities, conveniently located, are desirable.

BAYONNE HOUSING CORPORATION, NEW JERSEY
ANDREW J. THOMAS, ARCHITECT

Swings: To prevent accidents caused usually by children running into the swings, place them at one side of playground parallel to fence or building, or provide a low railing or iron pipe fence in front. Sometimes a white line 2″ or 3″ wide is marked on the ground as a safety precaution.

Dimensions: For small children swings should not be more than 8′ or 10′ high, with 3½′ to 4′ width for each swing. For older children the swings can be 11′ high, with 4½′ to 5′ width for each swing. A set of 3 swings will require 30′ x 35′ approximate use space.

Construction: A frame of galvanized steel pipe is most serviceable. Use 3″ pipe for horizontals and 2″ pipe, set in concrete, for uprights. Frames support 2 to 8 swings, but uprights are required between every 2 or 3 swings. The pipe collar supporting rope or chain should have a viselike grip since it bears strain of swinging. Hemp rope is more practical than manila, which must be shrunk. Steel chain with big links is generally used. A lightweight swing board, edged with rubber bumpers (a piece of old garden hose can be screwed on edges), minimizes liability of accidents.

Seesaw: The longer the board and the lower the standard, the safer the equipment. The teeter is not highly favored by playground workers, although generally provided.

Dimensions: Boards 12′ to 14′ long; support about 2′ high.

Construction: Provide safety bumpers to keep lower end 6″ to 8″ off ground. Round ends of boards. Handles are desirable. Use only vertical grain stock free from splinters, and paint frequently.

Giant stride: This apparatus consists of an upright pole with a pivot head from which several ropes or chains with ladder handles are fastened. Place in a corner to minimize danger to other children at play. A circle 30′ in diameter marked on ground will serve as a safety precaution.

Dimensions: Upright 14′ to 18′ in height.

Construction: Pole usually is made of 4″ galvanized steel pipe set about 4′ in concrete. A 1″ crosspipe at bottom will prevent upright from turning in the concrete. Four to eight ropes, or chains (which last longer), are attached to the rotating head. The ladder handles may be of wood, steel or aluminum; 2 or 3 knots at 18″ intervals near free end of rope may be used instead of ladders, if desired. Fill pipe with sand or concrete to deaden sound of chain ladders striking the uprights.

Horizontal ladder: *Dimensions:* Usually 7′ 6″ high. For children under 10, maximum height should be 7′.

Construction: Keep ground underneath well spaded, or excavated and filled with sand or shavings.

Traveling rings: This apparatus provides healthful exercise but accommodates comparatively few children and occupies much space. A circular traveling ring arrangement which conserves space has been recently put on the market.

Dimensions and construction: Rings are attached to chains suspended at 6′ intervals from a horizontal pipe 12′ to 14′ high. The height of rings is regulated so that the child can jump up and seize them; a low platform may be provided at one end for this purpose.

Jungle-gym: This climbing structure is a patented combination of horizontal ladders, horizontal bars, climbing bars, climbing poles and vertical ladders. The apparatus is highly endorsed by many recreation authorities. It can be used by many children at a time.

Dimensions: Manufactured in several sizes and combinations.

Horizontal bar: This piece of equipment occupies little space and is particularly attractive to boys.

Dimensions: Bar should be 5′ to 7′ 6″ high. Approxmate use space of 12′ x 20′.

Construction: If adjustable, bar should be kept in place and prevented from turning by a bolt or pin. Ground under bar should be kept clean and soft.

SPACE REQUIREMENTS FOR ORGANIZED GAMES FOR CHILDREN*

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required (Sq. Ft.)*	*Number of Players*
Baseball	75′ diamond	250′x250′	62,500	18
Basketball	35′x60′	50′x75′	3,750	10-12
Clock Golf	Circle 20′ to 24′ in diameter	30′ circle	706	any number (4-8)
Croquet	30′60′	30′x60′	1,800	any number (4-8)
Field Hockey	150′x270′	150′x330′	49,500	22
Football	160′x360′	180′x420′	75,600	22
Hand Ball	20′x30′	35′x40′	1,400	2 or 4
Horseshoe Pitching	stakes 30′ apar	10′x40′	400	2 or 4
Paddle Tennis	18′x39′	26′x57′	1,482	2 or 4
Playground Ball	45′ diamond 35′ diamond	125′x125′ 100′x100′	15,625 10,000	20
Soccer	150′x300′	150′x360′	54,000	22
Tennis	27′x78′ (single) 36′x78′ (double)	50′x120′	6,000	2 or 4
Tether Tennis	circle 6′ in diam.	20′x20′	400	2
Volley Ball	25′x50′	40′x60′	2,400	12-16

*These tables of space requirements have been prepared by the National Recreation Association.

Bowling and pitching horseshoes provide exercise which is not too strenuous.

SUNNYSIDE PLAYFIELD, NEW YORK

SPACE REQUIREMENTS FOR ORGANIZED GAMES FOR ADULTS

Name	*Dimensions of Play Areas*	*Use Dimensions*	*Space Required (Sq. Ft.)*	*Number of Players*
Baseball	90′ diamond	300′x325′ (or more)	97,500	18
Basketball	50′x94′ (max.) 35′x60′ (min.)	60′x100′ (average)	6,000	10
Basketball (Women's)	45′x90′	50′x100′	5,000	12-18
Boccie	18′x62′	30′x70′	2,100	2-4
Bowling Green*	14′x110′ (1 alley)	120′x120′ (for 8 alleys)	14,400	32-64
Clock Golf	circle 20′ 24′ in diameter	30′ circle	706	any number (4-8)
Cricket	wickets 66′ apart	420′ circle	138,545	22
Croquet	30′x60′	30′x60′	1,800	any number (4-8)
Field Hockey	150′x270′ (min.) 180′x300′ (max.)	180′x330′ (average)	59,400	22
Football	160′x360′	180′x420′	75,600	22
Hand Ball	20′x34′	40′x50′	2,000	2 or 4
Hand Tennis	16′x40′	25′x50′	1,250	2 or 4
Horseshoe Pitching	stakes 40′ apart	10′x50′	500	2 or 4
Lacrosse	210′x450′ (min.) 255′x540′ (max.)	250′x500′ (average)	125,000	24
Paddle Tennis	18′x39′	30′x60′	1,800	2 or 4
Playground Ball	35′ or 45′ diam.	150′x150′ (or more)	22,500	20
Polo	600′x960′	600′x960′	576,000	8
Quoits	stakes 54′ apart	25′x80′	2,000	2 or 4
Roque	30′x60′	30′x60′	1,800	4
Shuffleboard	10′x40′ to 50′	15′x50′ (or longer)	750	2 or 4
Soccer	150′x300′ (min.) 300′x390′ (max.)	210′x360′ (average)	75,600	22
Tennis	27′x78′ (single) 36′x78′ (double)	60′x120′	7,200	2 4
Tether Tennis	circle 6′ in diam.	20′x20′	400	2
Volley Ball	30′x60′	50′x80′	4,000	12-16

*Most bowling greens in public recreation areas are 120′x120′ which provide 8 alleys The amount of space required for a single alley would be 20′x120′.

LIVING ROOM OF APARTMENT OF MAURICE S. BENJAMIN 211 CENTRAL PARK WEST, NEW YORK CITY.
ELY JACQUES KAHN, ARCHITECT.

Gottscho

HOW LARGE THE APARTMENT SUITE?

Some 61 apartment houses, all of which were opened for occupancy between 1924 and 1927, have been made the subject of a detailed analysis,* by H. P. Somerville, a New York real estate operator, from the point of view of the sizes of the various rooms.

The buildings were divided into two broad classes: those in which the apartments rented for $700 or less per room per year, and those which rented for more than $700. 33 of the buildings fell in the former class and 28 in the latter. Of the total apartments, 112 fell in the group of those renting for $700 per room or less, and 58 in the second group. Of the number of rooms covered by the study, 740 were in the group of lesser cost and 421 in the group of higher cost. The average height of the buildings in the lower-cost apartments was 12 stories and 13 stories in the higher-cost groups, the greatest height in the lower-cost group was 16 stories and 20 stories in the other group; the least height was 9 stories in the first group and 3 stories in the second group. The average rental in the lower-cost group was $577 per room; and $860 in the higher group. The highest rental was $690 in the lower-cost group and $2100 in the higher-cost group: while the lowest rental was $410 per room in the lower-cost group and $700 in the higher-cost one.

The following figures give in detail the area, the average size, the smallest size, and the largest size of each of the principal rooms in the apartment houses included in this study, including foyer, living room, dining room, kitchen, bedrooms, maid's rooms and bath rooms.

Foyer—Average	5.5'x10.4'	7.5'x15.4'
—Area	57.25 Sq. Ft.	115.5 Sq. Ft.
—Small	3.0'x4.0'	4.0'x6.0'
—Large	15.0'x16.0'	10.0'x40.0'
Living Room—Average	13.8'x20.7'	18.6'x23.8'
—Area	285 Sq. Ft.	443 Sq. Ft.
—Small	12'x14'	13'x17'
—Large	15.3'x34'	18'x29'
Dining Room—Average	13.4'x17.5'	14.5'x18.7
—Area	234 Sq. Ft.	271 Sq. Ft.
—Small	11'x14'	12'x12'
—Large	13'x25'	19.6'x22.6'
Kitchen—Average	7.6'x12.5'	9.2'x14.2'
—Area	95 Sq. Ft.	131 Sq. Ft.
—Small	5'x8'	4.9'x11.9'
—Large	14'x17'	11.8'x18.8'
Chamber—Average	12.2'x16'	12.9'x17.1'
—Area	195 Sq. Ft.	221 Sq. Ft.
—Small	9'x11'	10.4'x12.7'
—Large	14.9'x21'	16'x26'
Maid's Room—Average	7.1'x11.3'	7.2'x11.1'
—Area	80 Sq. Ft.	80 Sq. Ft.
—Small	5'x10.4'	6'x12'
—Large	8'x12.4'	9.9'x12.3'
Bath Room—Average	5.7'x7.9'	5.9'x8.8'
—Area	45 Sq. Ft.	52 Sq. Ft.
—Small	5'x6'	5'x7'
—Large	7'x11'	8'x13'

While this study concerned itself with high class apartment houses occupied by the higher income group, a similar study of room sizes in the lower income group would unquestionably prove profitable and might ultimately lead to a tendency toward standardization of room sizes in the buildings designed for that class in the community.

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*Appearing in the March, 1930, issue of *Housing*, published by the National Housing Association.

DEVELOPING BUSINESS FOR THE ARCHITECT

To the Editor:

I was much interested in the details of the Beaux-Arts Apartments which Raymond Hood was instrumental in building and which you featured in "The Architectural Record." Would it be possible to obtain from you more information concerning this project, especially the financial setup?

In looking for new ways in which the architect might sell his services to the public, it has occurred to me that it is time for him to take the initiative and enter fields that so far he has been content to leave for others. The speculative small house as built by the contractor is badly planned and atrociously detailed. Cannot the architect, with dignity and without being unethical, head up an organization composed of tried subcontractors who, together with the architect, would contribute the total of the building. This group would assess against the work only their exact costs. The profit from sales would be divided on some equable basis, presumably upon the relative amount of work furnished at cost. Whole developments of small houses, themselves well designed with properly distributed community centers, can only be achieved when controlled by one capable mind. The architect is the only specialist who has this capability. Why should he not displace the speculative contractor to his as well as the neighborhood's everlasting credit?

Respectfully,

(Signed) Lamont H. Button, Architect
Pittsburgh

THE ARCHITECT HIS OWN CLIENT

Case: The Beaux-Arts Apartments, New York City
Architects: Kenneth M. Murchison, and Raymond M. Hood, Godley and Fouilhoux, associated.

Many architects have been their own clients for various types and sizes of building but probably the largest venture is the recently completed Beaux-Arts Apartments, a project costing $5,250,000. This enterprise was accidental in its inception but has proved so satisfactory that the architects are now working on a similar project. Mr. Raymond Hood, while negotiating for the purchase of a site for the Beaux Arts Institute, New York, discovered that the adjoining property could be bought at a very reasonable figure, so he got together a group of friends to assemble a large plot and to build. He invited the group, consisting of ten architects, three decorators, two artists, a real estate firm, a firm of real estate attorneys and a firm of general building contractors, to meet at luncheon. It was decided that if the cloak and suit merchants could make money from the services of the architect and builder, the architect and others in the building industry could also make money by following their own advice. As a result of the luncheon, $150,000 was contributed by various individuals. The George A. Fuller Company agreed to match this sum and with this capital, plus the architectural fee contributed in services, a deal involving $5,250,000 was worked out.

The method of financing the enterprise is described* by John Reed Kilpatrick, vice-president of the George A. Fuller Co.:

"A careful budget was made of all of the various costs necessary to produce the completed structures, not arrived at by appraisals or by capitalizing estimated earnings, but by carefully calculating the actual costs of the various elements necessary to turn over complete income-producing buildings.

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* "Financing Also Goes Modern," appearing in *Building Investment*, February, 1930.

"Seventy-five per cent of this amount was provided by an issue of six per cent cumulative preferred stock which was sold to the public through the National City Company, each share of preferred stock carrying with it a bonus of one share of common stock.

"The remaining twenty-five per cent of the funds required was provided by an issue of second preferred stock which was underwritten by the original syndicate, the builders and the architects. This issue of second preferred stock, subordinate only to the first preferred, carried the same rate of interest as the first preferred, but received three shares of common stock with each share of preferred. Sufficient shares of common stock were provided so that forty per cent of the issue went with the first preferred and forty per cent with the second preferred stock issues. The remaining twenty per cent went to the U. S. R. Management Corporation, a company organized jointly by the United States Realty & Improvement Company and the National City Company for their services in financing the operation and to provide continuity of management for the completed structures.

"This scheme of financing has many obvious advantages. The purchaser of the first preferred stock has the same security that the purchaser of a first mortgage bond has, with the single exception that he has not the right of foreclosure. He is assured, however, that the property cannot be 'milked'—for three quarters of the net earnings in any period *must* be applied to the redemption of the class of stock that he holds. In this particular operation (the Beaux-Arts Apartments), if the buildings are even less than fifty per cent rented, the entire first preferred dividend will be earned. On the other hand, if it is an outstanding success he shares substantially in the excess earnings through the common stock which he receives as a bonus with his original purchase of preferred stock.

"So much for the holder of the first preferred, and now let us consider the situation of the holder of the second preferred: While he furnishes only twenty-five per cent of the money required, he receives forty per cent of the common stock in the enterprise. Due to the fact that there is no mortgage ahead of his security, but only the first preferred, he cannot lose by foreclosure, nor is there any possibility of the second preferred stockholders being required to furnish money to meet any deficit in operation, since if the buildings are even less than twenty-five per cent rented, sufficient money would be provided thereby to fully meet taxes and operating expenses,—the only obligatory payments ahead of his security.

"If the buildings are successful, in a comparatively short space of time he receives back through the application of all earnings to the redemption of the first and second preferred stocks his entire investment and thereafter he receives a very substantial income through his common stock holdings, which he receives as a bonus."

If the architect is to enter the promotion field he should prepare financial data which not only include estimated cost and rentals, but allow ample leeway for financing and vacancy costs while the project is getting under way. Every promotion scheme is an individual problem and must be worked out in cooperation with someone who has had experience in local conditions. The financial data tables given by Keast and Randall in the April 1930 issue of The Arhitectural Record may prove valuable to any one preparing a financial statement for an office building. These tables give the customary discounts and financing costs for commercial enterprises which, of course, will have to be modified to suit local conditions.

CLOTHES CLOSETS

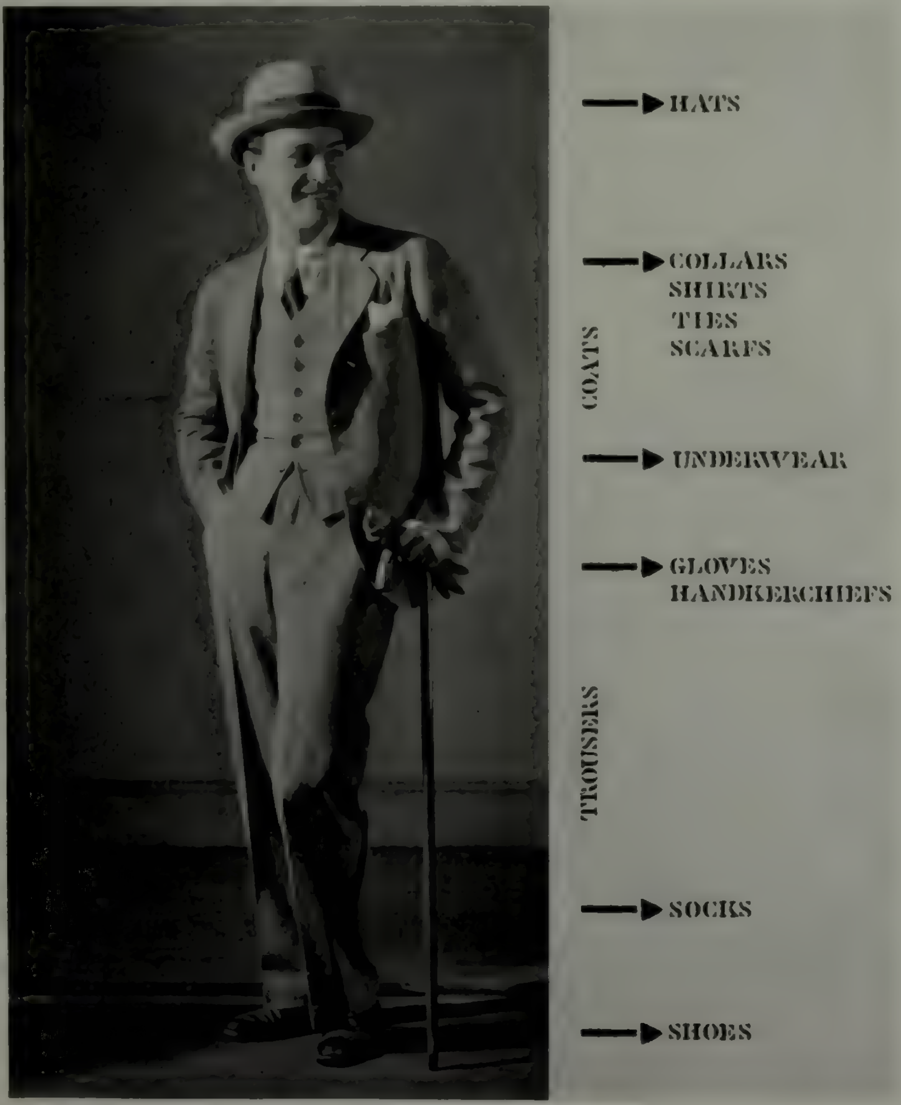
MAKE THEM CONVENIENT AND INCREASE THEIR CAPACITY

By A. LAWRENCE KOCHER and ALBERT FREY

Space for the storage of wearing apparel in the apartment or home can be adjusted to the variety of needs for clothes storage. That clothes closets, generally, are not more efficient may be due to failure on the part of the architect to consider carefully the specific purposes of closets and the kinds of storage to be provided. It is obvious that there should be no waste of space, and the methods for hanging or shelving garments, shoes and accessories should be convenient. There are also protective measures that can be taken to eliminate or reduce injury to woolens and furs by moths. The weatherstripping of doors will aid in excluding dust and in retaining the aroma that destroys clothes moths when the closet is cedar-lined.

It is desirable that there be separate storage for each person. The drawer and hanging capacity and the arrangement will naturally vary with the personal habits of clients.

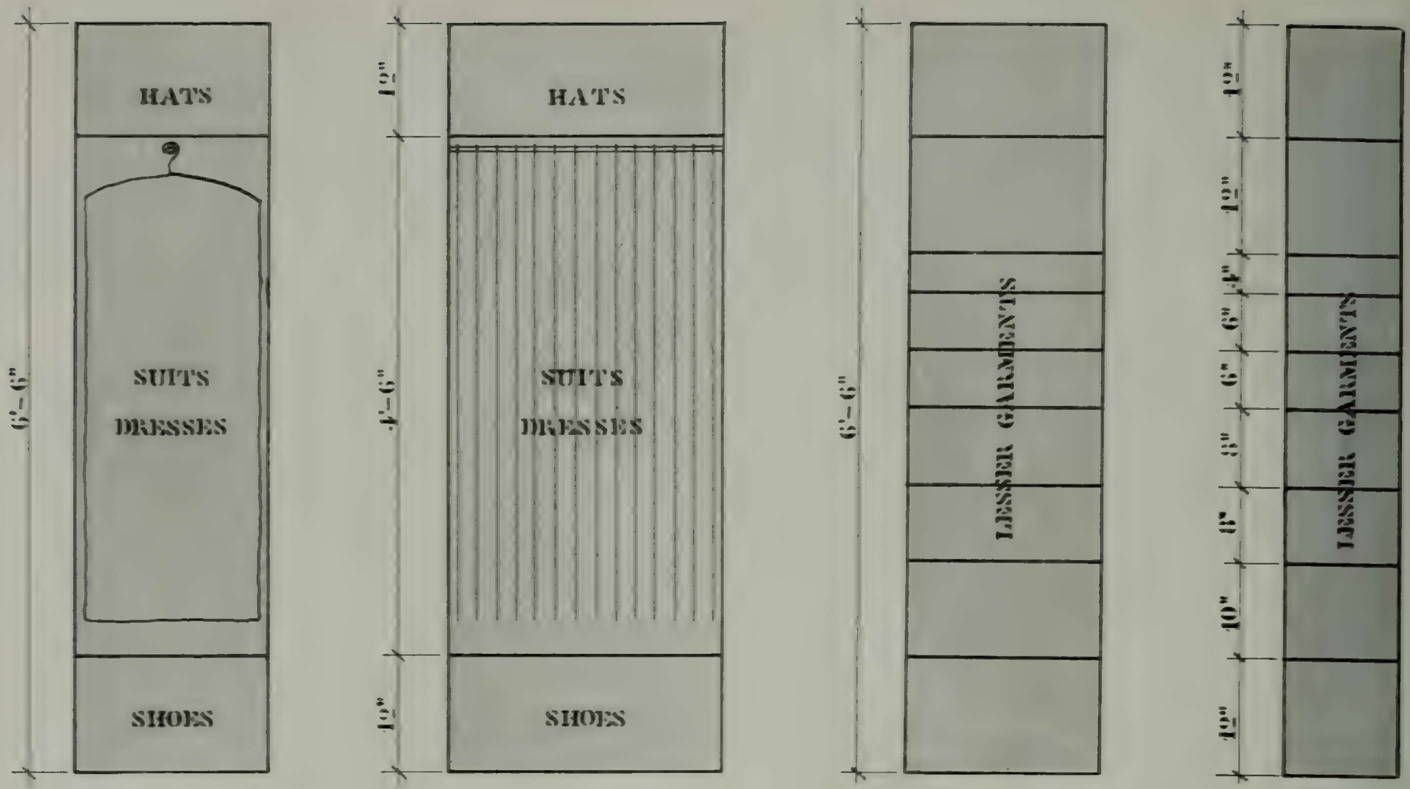
Assistance in the preparation of this article was received from the United States Department of Commerce and from manufacturers, either through their catalogues as filed in Sweet's Architectural Catalogues or by contact.



Underwood and Underwood

HOW SHOULD WEARING APPAREL BE STORED?

Convenience determines storage space, height above floor and arrangement of the clothes closet. The place for personal effects should correspond, generally speaking, to the height of garment when worn. Hats are normally stored at head height or higher, but always within arm's reach. Coats and dresses are hung at shoulder level while shoes are lowest. It would be a paradox were we to reverse the position of shoes and hats. Lesser garments are distributed between the two extremes and at levels below the eye—where selection of color or pattern can be exercised. Accessories such as collars, gloves, handkerchiefs and scarfs are grouped. Women's undergarments correspond in location to men's shirt's, but with men underwear is at a lower level.



ELEVATIONS

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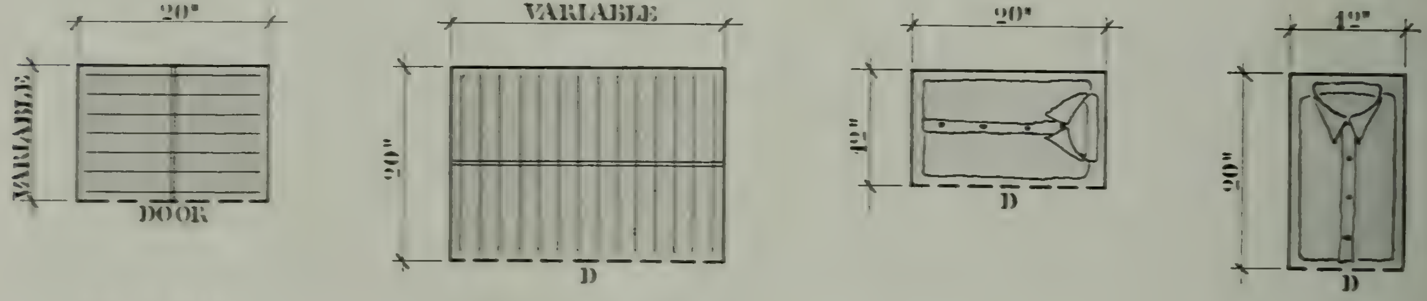
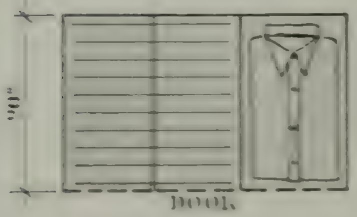


PLANS

Minimal space required for wearing apparel. Inside space requirements for the average clothes closet are determined by the outside dimensions of coats, shirts and accessories.

1. See plan. Inside width of closet determined by coats and dresses hung parallel to door. The depth is variable. See elevation. The height accommodates hanging garments.
2. Depth of closet (inside) when garments are hung at right angles with door.
3. 4. Laundered shirt size determines space for lesser garments. These are stored in drawers, on shelves or in baskets, and are superposed to form a unit that may be combined with the unit for suits and dresses.



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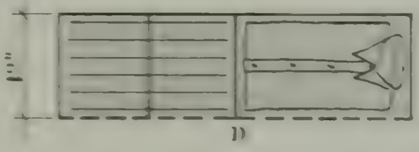

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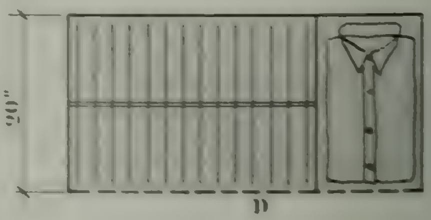

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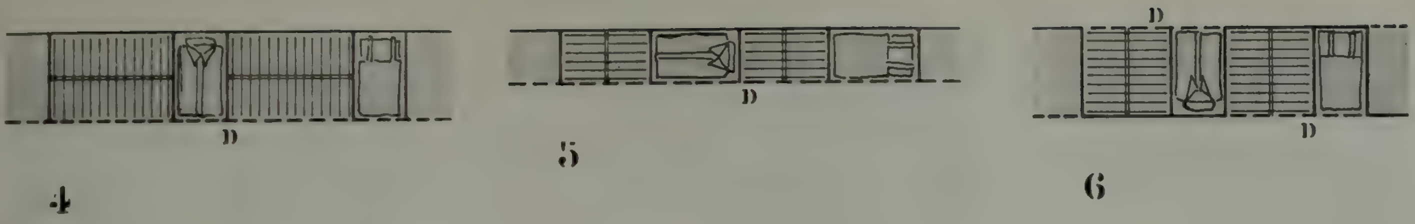
Combination of units (for one person)

1. Combination with least width that is practicable
2. Shallowest combination
3. Arrangement with variable width.

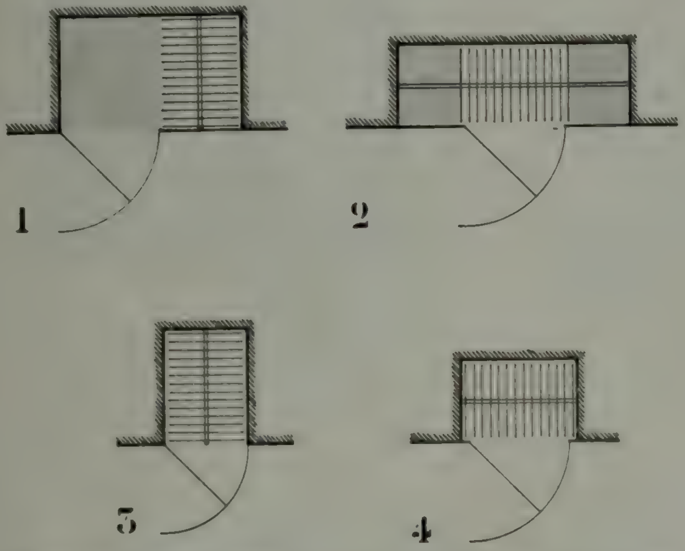


Combination of units (for two persons)

4. Closets of variable width.

5. Minimal depth.

6. Closets combined for adjoining rooms. Access is from alternate rooms.

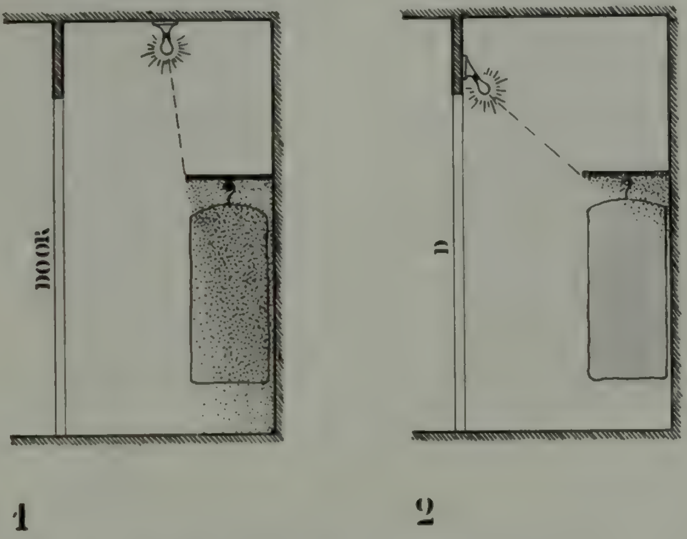


Eliminate waste space in closet. (Unused floor area indicated in gray).

1. The space for entrance is not usable for storage and is therefore "waste."
2. Spaces beyond the width of door are inaccessible and cannot be satisfactorily adapted to clothes storage.

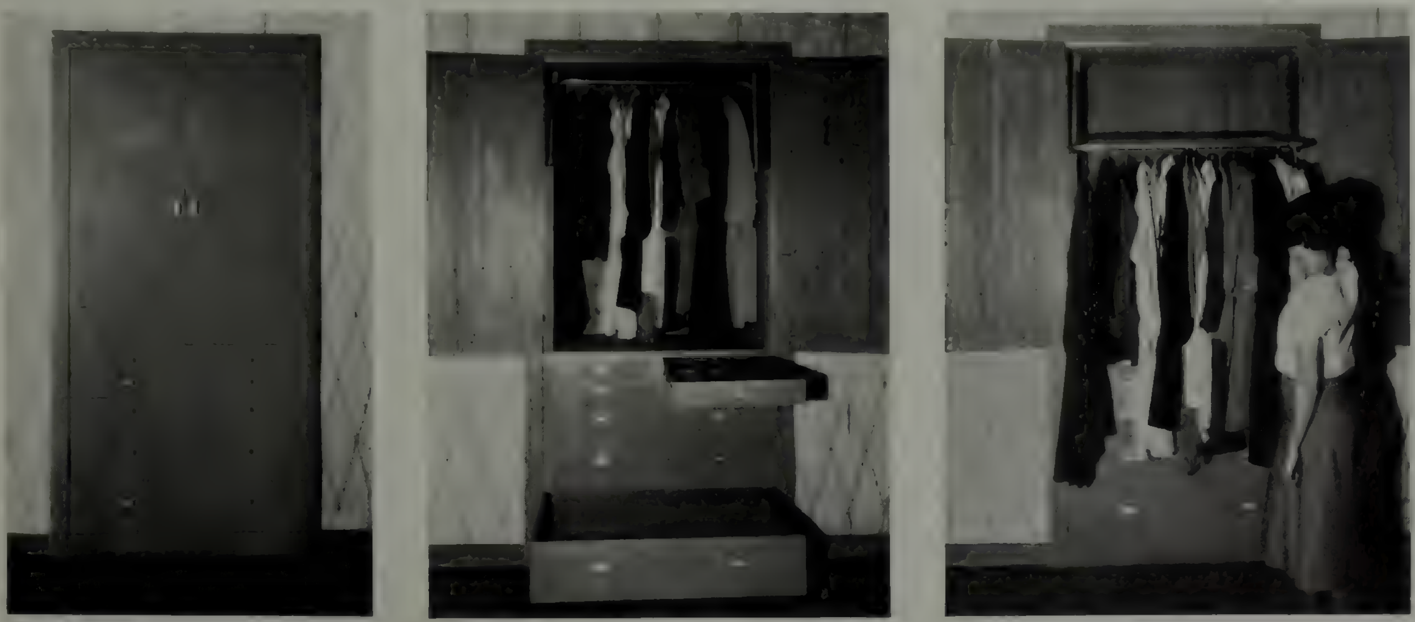
Compact Closets

3, 4. Closets with same accommodation but with direct access and without "waste." Hanger rods may be brought out to light.



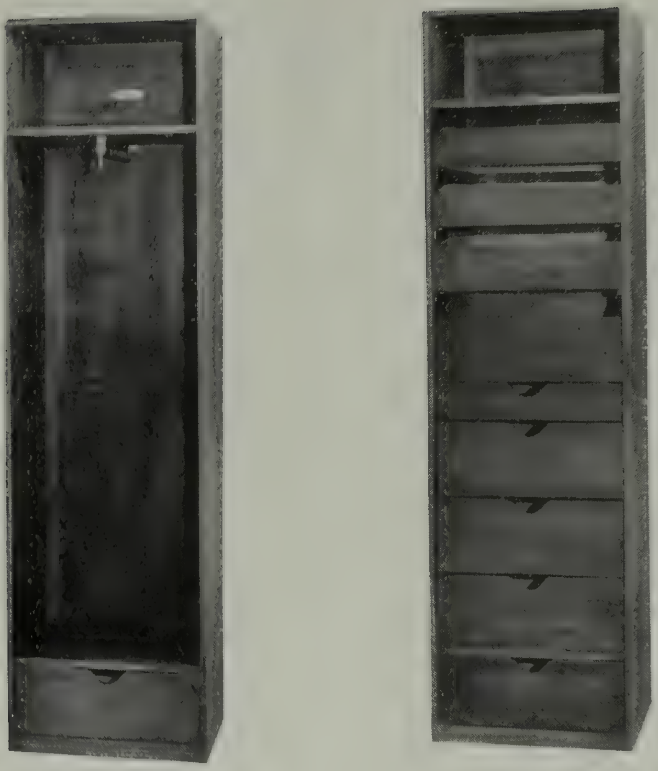
Improve lighting of the usual closet.

1. Light fixture at center of ceiling. Here the hung garments are in shadow.
2. Over-door light, operated by automatic light switch as door is opened. Hung garments are illuminated.



Patented

A special wardrobe with hanger rack that is lowered by a lever. The lowered garments are brought forward within convenient reach. This type of closet occupies little space and makes use of upper compartment for hanging



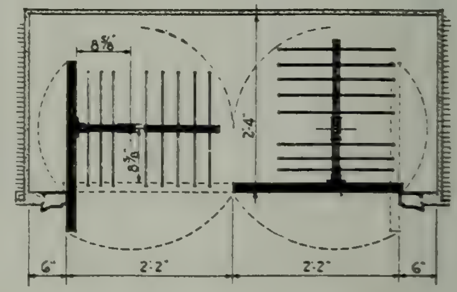
For suits, hats and shoes

Lesser garments

Closet sections (in wood) of identical size that makes possible the combination of two or more units.

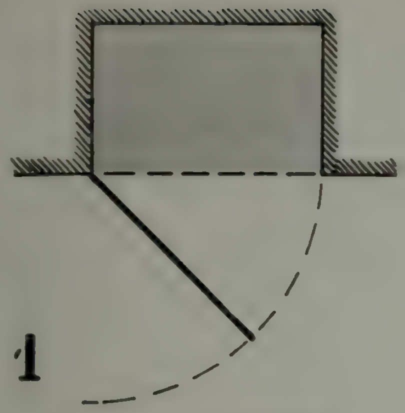
Air-tight closet for storage of furs and coats. It is cedar lined for moth protection.

These doors may be arranged in series without mullion between doors.



Clothes closet of heavy steel, welded and made with two compartments. Drawers are of dustproof construction.

Wardrobe with a patented door which does not require space in front of closet.



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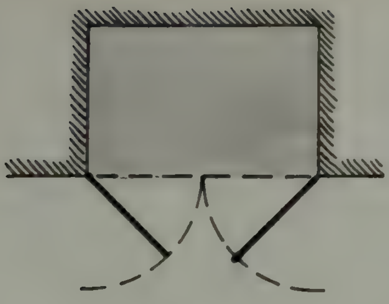

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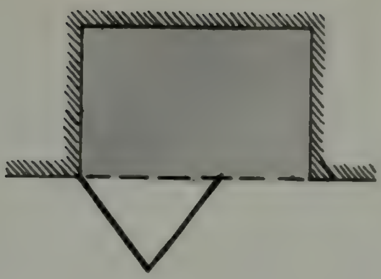

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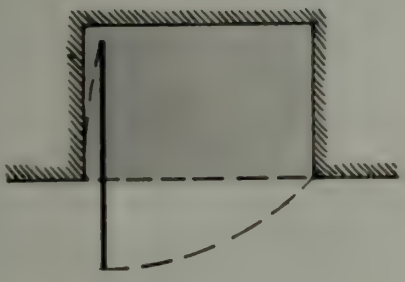

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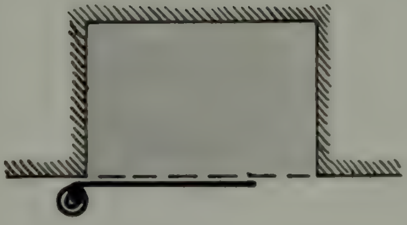

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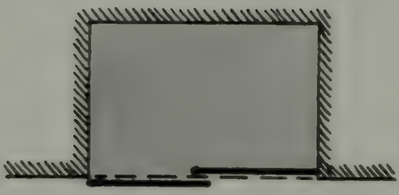

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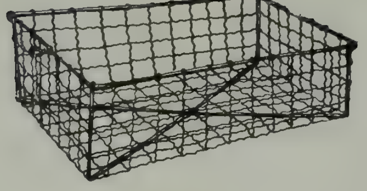
DOORS

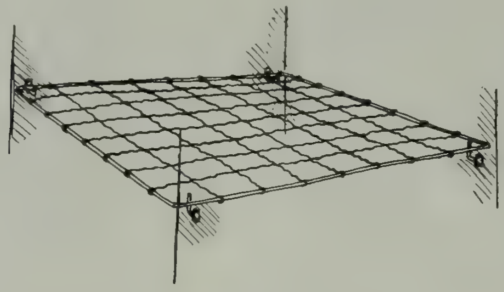
1. Single hinged door, width of closet. The single hinged door is most economical and generally most satisfactory. It should be hung so as to admit daylight from window. In a limited space the excessive swinging radius of the single door is objectionable.
2. Double swinging doors have small radius but require two movements to operate. Hardware and door costs are greater than for single door.
3. Folding door with lesser projection that operates on tracks with one movement.
4. Door of slight projection that swings into closet but requires some closet space.
5. Door that operates on spring rollers with one movement and occupies little space when open. The mechanism requires upkeep.
6. Two sliding doors with no projection. Only half of closet can be open at one time.

Telescopic hanger that occupies little space when compressed and which permits extension and brings clothes into plain sight.

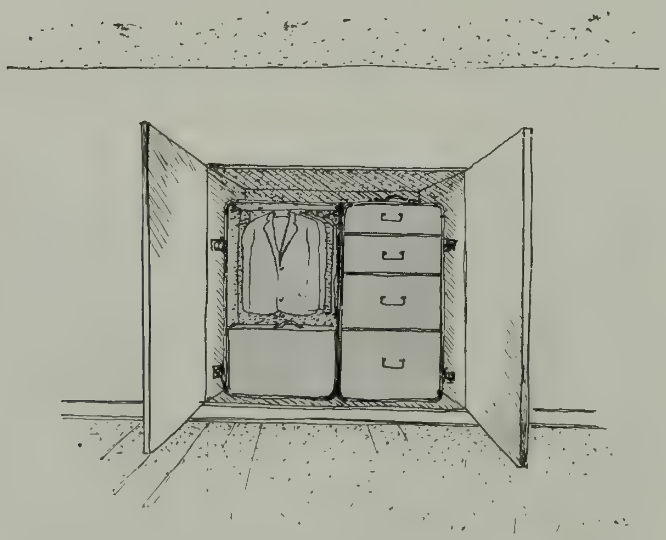
Hanger rack that can be brought into room for selection or hanging of garments.



Basket of woven wire for garment storage that in some cases may replace drawers. Contents are visible. The basket is easily transportable because of its light weight.



Woven wire shelf (an alternate for wood or glass). The wire shelf permits free circulation of air, does not collect dust, and gives visibility from below.



Suggestion for storing the wardrobe trunk, (opened) behind closet doors. In this way it is accessible for clothes storage. It is desirable for hotels and for one who travels extensively.

PROVIDE STORAGE FOR

Men's Apparel and accessories

- Hats
- Suits
  - Business
  - Sports
  - Evening
- Overcoats
- Shirts
- Underwear
- Pajamas
- Neckties
- Collars
- Sweaters
- Gloves
- Scarfs
- Handkerchiefs
- Collar buttons, studs, clasps
- Belts
- Socks
- Shoes, slippers, pumps
- Luggage
- Walking sticks and umbrellas

Women's Apparel and accessories

- Hats
- Dresses
  - Street
  - House
  - Boudoir
  - Sports
  - Evening
- Coats
- Furs
- Undergarments
- Stockings
- Nightdresses and pajamas
- Gloves
- Woolens
- Scarfs
- Handkerchiefs
- Handbags
- Costume jewelry
- Suitcases and hatboxes
- Umbrellas and parasols
- Shoes, slippers

Full length mirror on door
Clothes brush, shoe brush, and whisk broom
Bottle, Spot remover

BIBLIOGRAPHY

—Aromatic Red Cedar Closet Lining, U. S. Department of Commerce, CS26-30, issued January 10, 1931. Price 5 cents.
—Clothes Moths and Their Control, U. S. Department of Agriculture, Farmers' Bulletin No. 1353.
—Ein Möbelbuch, by Franz Schuster, Frankfurt-am-Main.
—Das Möbel als gebrauchs-gegenstand, Stuttgart, 1928.

The Clothes We Wear, by Frank G. Carpenter. American Book Company, New York. 1926.

Selection and Care of Clothing, U. S. Department of Agriculture, 1089.

Cedar Chests by Ralph F. Windows, Bruce Publishing Company, Milwaukee. 1918.

AROMATIC RED CEDAR CLOSET LINING

Closets lined with red cedar heartwood of correct thickness and construction are a very satisfactory protection against clothes moths, provided the articles to be stored are first thoroughly brushed or otherwise treated to remove the older clothes moth larvae. The volatile oil in the pure heartwood of red cedar gives off an aroma that kills the newly hatched or young larvae or worms of clothes moths. The Cedar lining for walls, floor and ceiling must be approximately airtight, $\frac{3}{4}$'' or more in thickness. Veneering of cedar is *not* effective. Cedar closets cannot be depended upon to kill the moth, their eggs or worms after they are one-half to full grown or after they are 3 or 4 months old.* It is therefore essential that clothing hung or stored in cedar closets or chests be free from the older larvae or moth worms.

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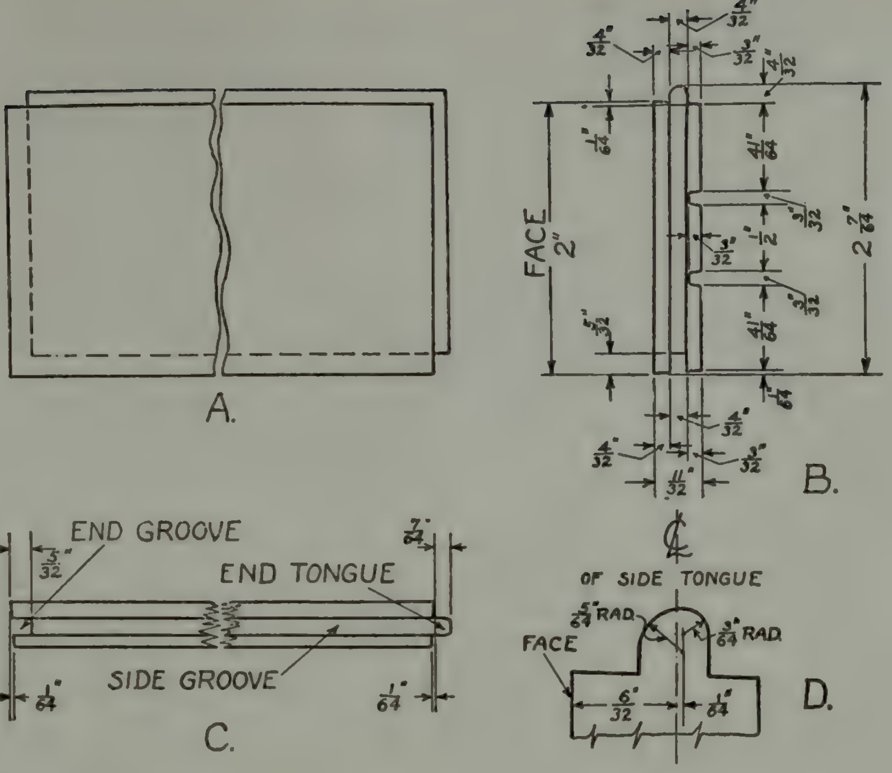
*Clothes Moths and Their Control, U. S. Department of Agriculture, Farmers' Bulletin No. 1353, p. 36.



Cedar lining detail with dimensions and approved profile for jointing. The cedar lining for walls should be at least ⅜" thick. The flooring of cedar is preferably 13/16" in thickness as a minimum and may slope toward door or may be raised approximately 2" above level of outside room floor.

CONSTRUCTION OF RED CEDAR CLOSETS

The U. S. Department of Commerce recommends the following construction: "The entire surface of the closet should be covered, including the inside of the door, with ⅜" cedar lining. It is preferable to use 13/16" cedar flooring for covering the floors, but ⅜" may be substituted if desired. The door should be tight fitting, and, if necessary, it should be weather-stripped.*

"In lining a closet already built and plastered, the lining may be placed directly on the plaster if care is exercised to nail on the studding. Face nailing is recommended, but blind nailing may be used if preferred. It is not necessary that the end joints come directly over the studding as the end matching will hold any short pieces in perfect position that may be placed between studding.

"Red cedar shelving is recommended. This adds to the general appearance of the closet or storage room and also increases its efficiency. It is also recommended that all corners be fitted with cedar quarter-round molding, since the more cedar that can be economically worked into the installation the greater the efficiency, for it is the aroma that is thrown off from the cedar that checks destruction by moths, and the greater the quantity of cedar, the greater the amount of aroma.

FOR USE IN NEW HOME

"Where installation is being made in new homes, it is recommended that the closet be lined with wall board, deadening felt, or other insulating material free from offensive odors, or else plastered, but it may be nailed directly on the studding. In this event it is best to close all spaces between studding at the floor and at the ceiling in order to prevent the escape of aroma between the studs. Another method of preventing this loss of aroma from the back side of the lining is to coat it with a suitable material which will effectively seal the wood. Such protective coatings as shellac, paraffine, or lacquer, which are quick drying, have been found effective for this purpose.

"Positively no paint, varnish, or other finish should be used on the interior of the closet, since this would seal the wood and prevent the volatilization of the cedar oil which is the effective agent in protecting stored material from ravages by clothes moths. Furthermore, painted or varnished surfaces within the closet may soften or become tacky and in this condition may damage garments coming in contact with them.

USE OF CEDAR CLOSETS, CHESTS, AND STORAGE ROOMS

"All articles should be free from moth eggs and larvae when placed in a cedar chest or closet. This can best be accomplished by dry cleaning. If this can not be done conveniently, the articles should be thoroughly brushed, aired, and sunned.

"It is absolutely necessary that the door be kept closed except when articles are being placed in or removed from the closet. Failure to adhere strictly to this rule materially decreases the efficiency of the closet or other cedar storage receptacle."

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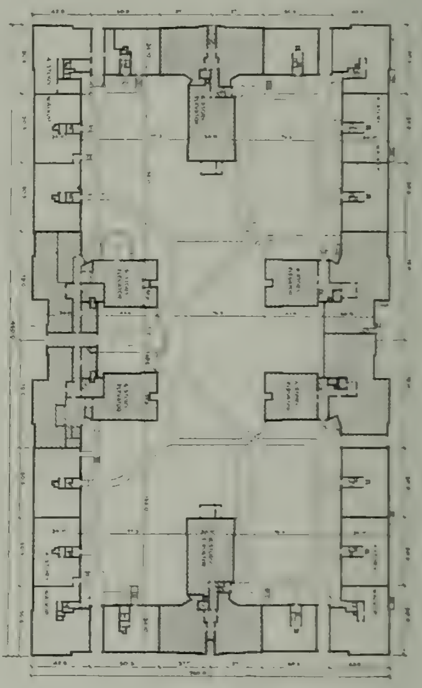
*Aromatic Red Cedar Closet lining, U. S. Department of Commerce, CS 26-30, issued January 10, 1931.

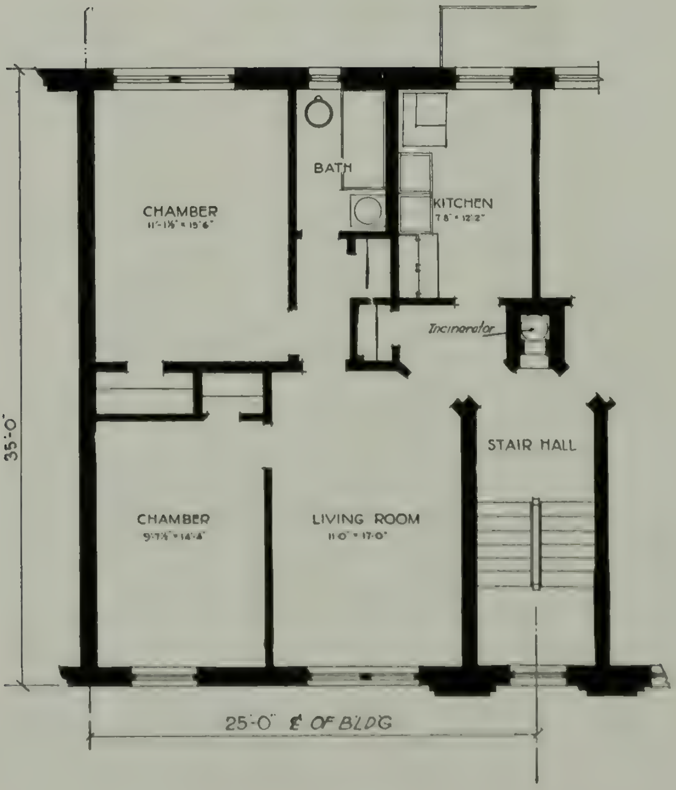
BASIC UNITS FOR WALK-UP AND ELEVATOR TYPES OF APARTMENTS

By ROBERT L. DAVISON

The differences of plan problems presented by the walk-up and elevator types of apartment houses are evident in the following analysis of plan elements from the Society of Phipps Houses at Sunnyside, Long Island, and other housing developments by Clarence S. Stein, architect.

	4-STORY WALK-UP		6-STORY ELEVATOR		TOTAL	
	Number	%	Number	%	Number	%
Apartments	130	38	216	62	346	100
Rooms	524	43	686	57	1210	100
Ground Coverage of Bldgs.	29,216 sq. ft.	51	28,000 sq. ft.	49	57,216 sq. ft.	100 (43% of lot)
TOTAL AREA ALL FLOORS	116,864	41	168,000	59	284,864	100

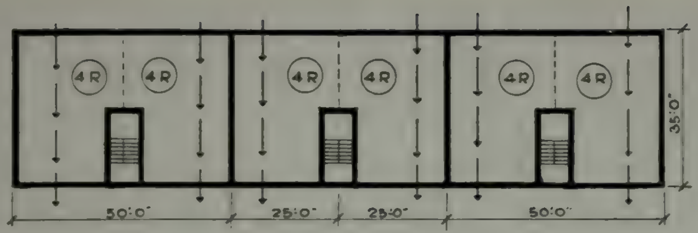




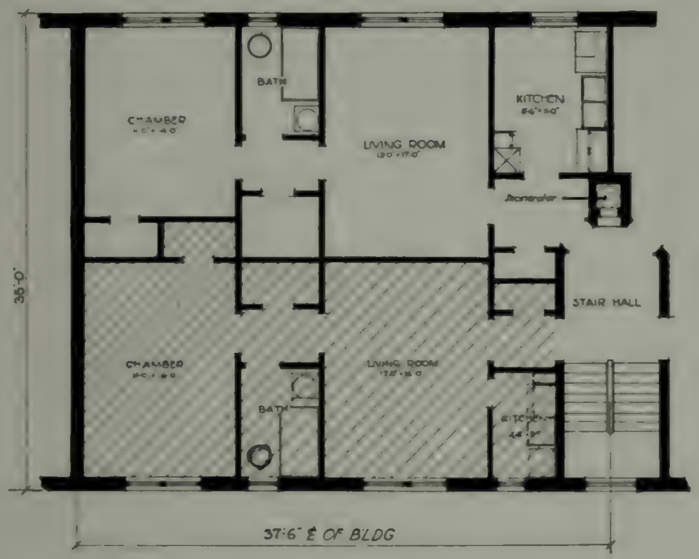
WALK-UP APARTMENT ELEMENTS

The walk-up portion consists of 1½-, 2½-, 3- and 4-room apartments that are grouped to form three basic plan elements. These have combined stairhalls.

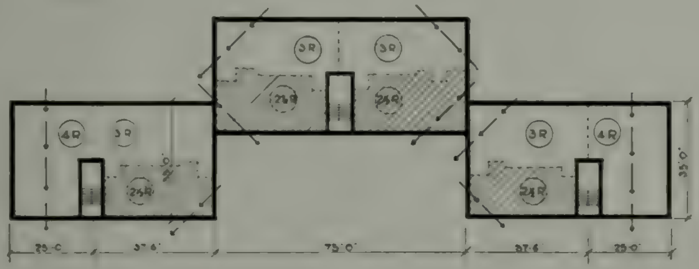
The 4-room apartment is the element from which the other units are developed. It has been evolved through many years of experience in designing moderate-priced apartment buildings for limited dividend companies who have sought to give maximum convenience with low rentals rather than buildings which would rent because of location or entrance foyer.



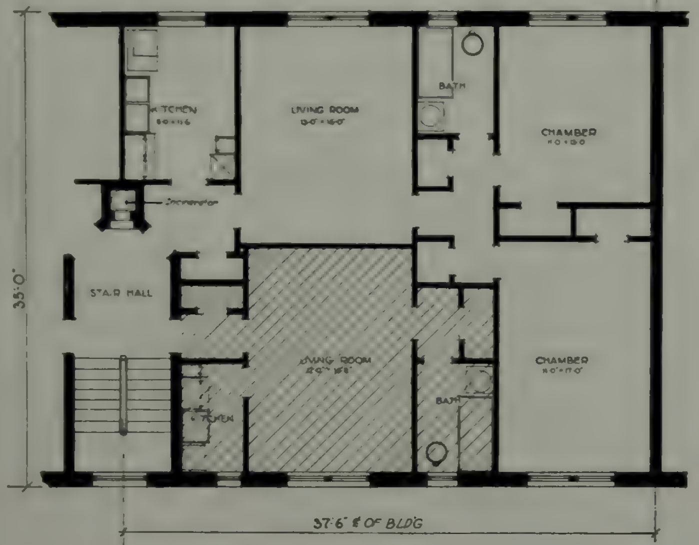
The outstanding characteristic of the 4-room apartment is its ability to obtain cross-ventilation, permitting the the use of this element in straight rows.



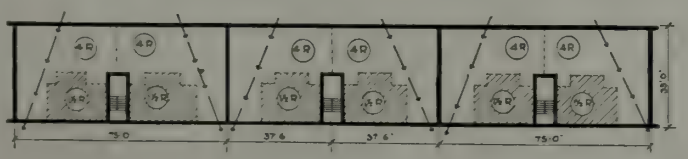
The 3-room unit combined with the 2½-room unit was developed to meet the requirement for smaller apartments. The 2½ rooms on the stair side of the unit are the logical result of providing space for the stair hall.



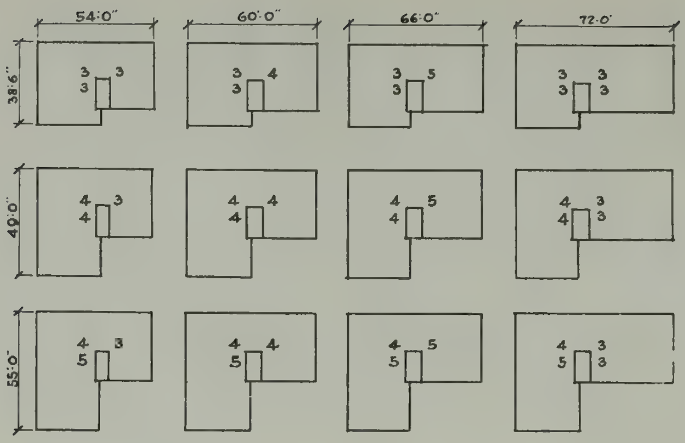
It is advisable as far as possible to restrict the use of this unit to those portions of the plan where an offset can be obtained. This will permit exposure on the end of the element, giving cross-ventilation.



The 4- and 1½-room apartment combination unit is a variation which may be used where it is desirable to have a 37½′ unit on one or both sides of the stairhall instead of the 25′ frontage of the standard 4-room apartment.



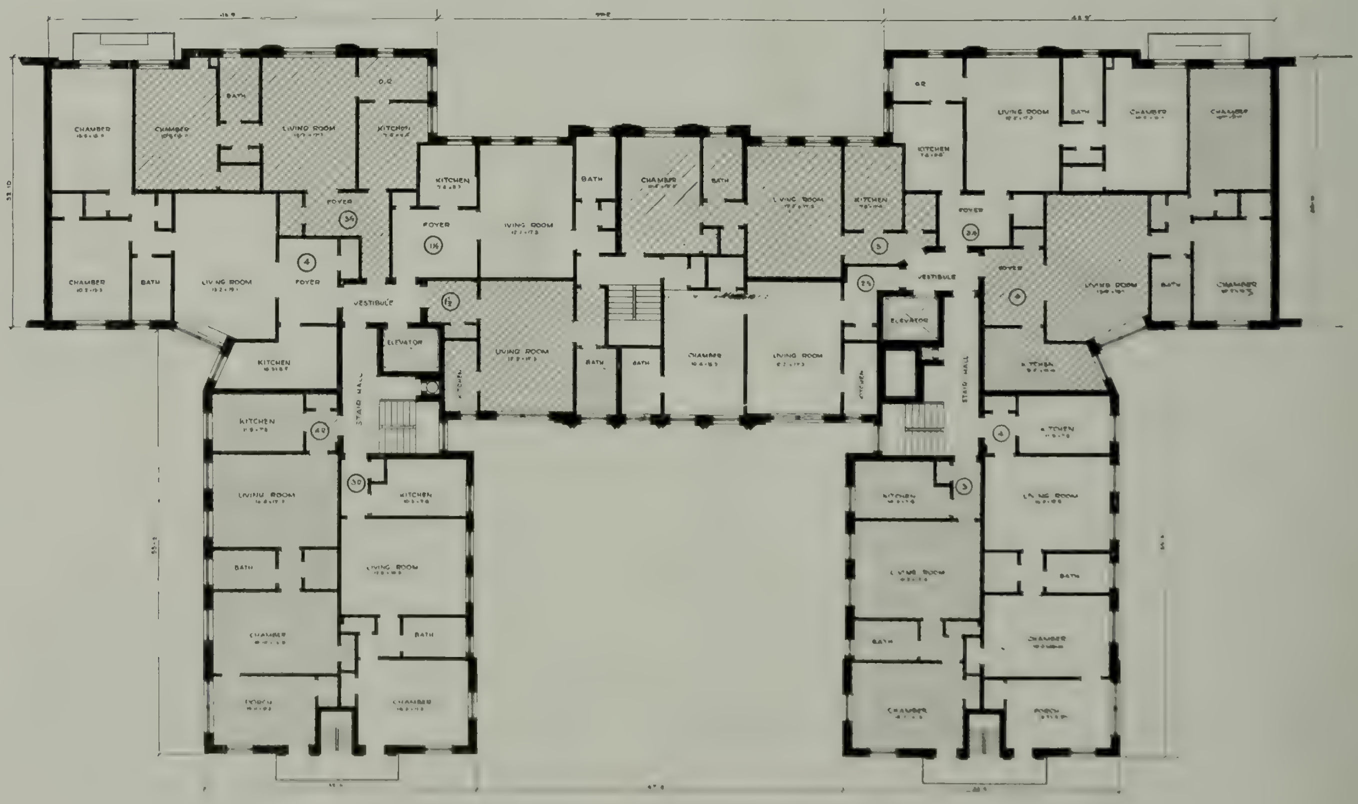
This arrangement permits cross-ventilation in the 4-room apartment. The 1-room apartment is limited to such ventilation as may be obtained through the stairhall.



The corner units forming T's in plan develop somewhat different problems than the simple I-units just discussed. However, very much the same elements can be combined in a variety of ways as shown in the adjoining diagram.

ELEVATOR APARTMENT ELEMENTS

The problem of combining apartments into basic units around an elevator shaft is quite different from that met in the walk-up type of apartment. In the study of the Phipps apartments it was estimated that at least 100 rooms were required to be served by an elevator to make its use economical. This, together with the height limitation of 6 stories for semi-fireproof construction, made it essential to use a T-unit where elevators are required. The fact that the stem of the T is open on three sides permits the use of 2½ or 3-room apartments on both sides of the central walls in the stem unit.

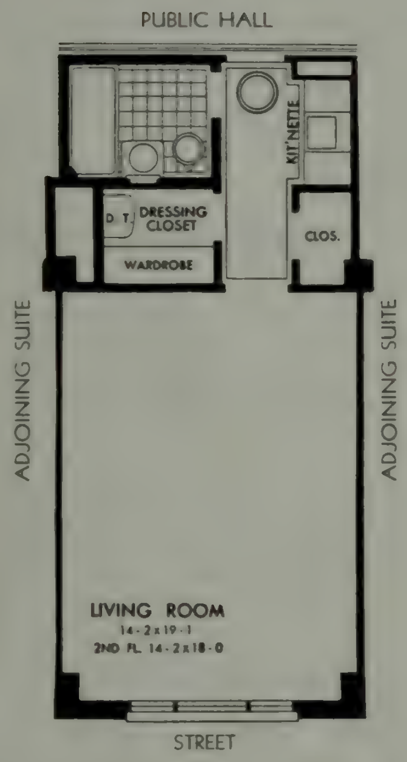


It is necessary to provide an additional fire-escape where two T's meet or else to provide a fire stair well as shown on the plan. Careful estimates indicated that the stair well was less expensive than the fire-escape for this plan.

PLAN STUDIES FOR APARTMENT SUITES OF ONE, TWO AND MORE ROOMS

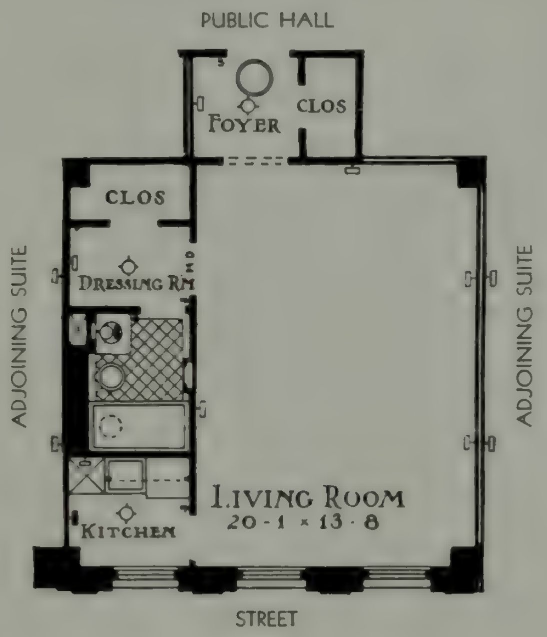
COMMENTS BY ARTHUR C. HOLDEN, ARCHITECT

ONE-ROOM APARTMENT PLANS



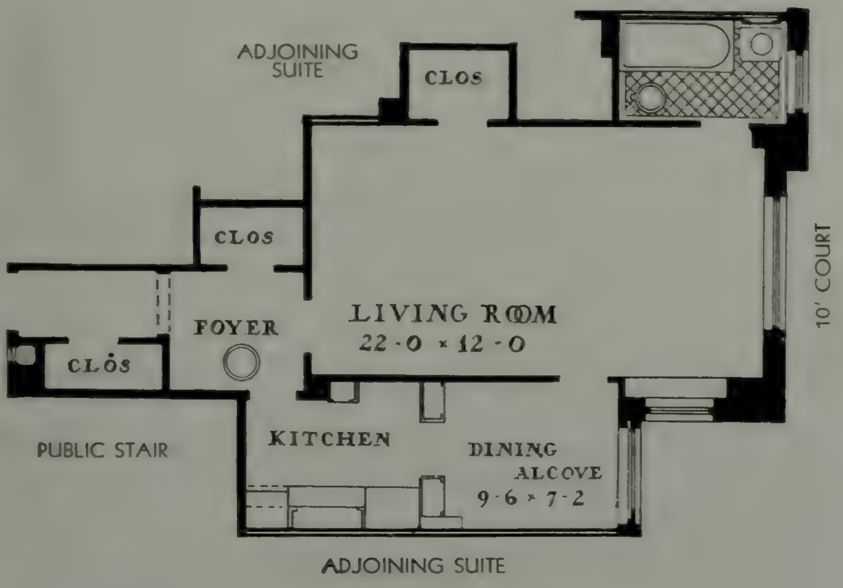
1. Bath and kitchen have no daylight. Exterior wall is used entirely for lighting principal rooms, forcing the subordinate elements to the interior.

THE MAJOR LANE, 148 EAST 48TH STREET,
NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS



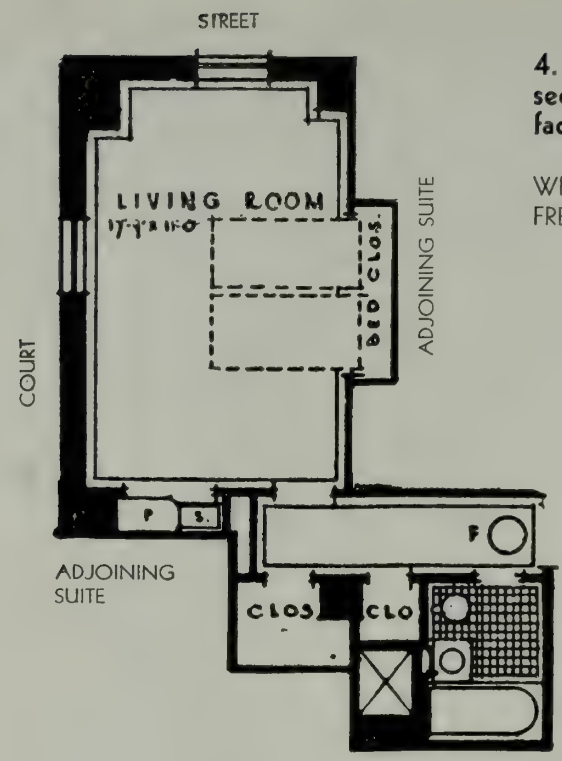
2. Kitchen has daylight. The subordinate elements are placed between long rooms, thus securing outside air for the kitchenette and making it unnecessary to pass the stove in entering.

319 EAST 50TH STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT



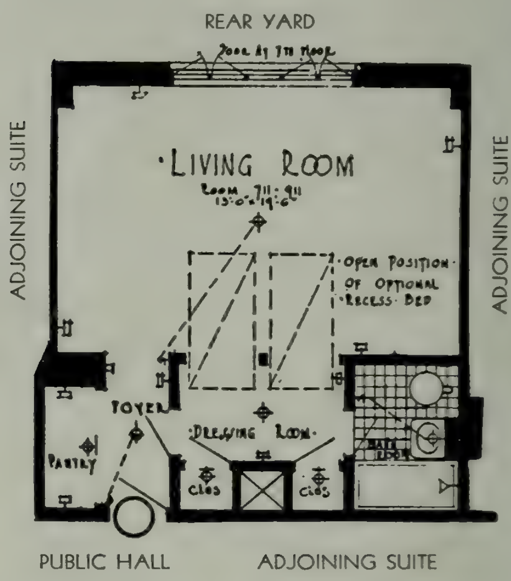
3. Both kitchen and bath have daylight. The architect has insured outside air by backing bath and kitchenette with the secondary facilities of the apartments. Most important of all, access to the kitchen without passing through the living room is provided.

424 EAST 52ND STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT



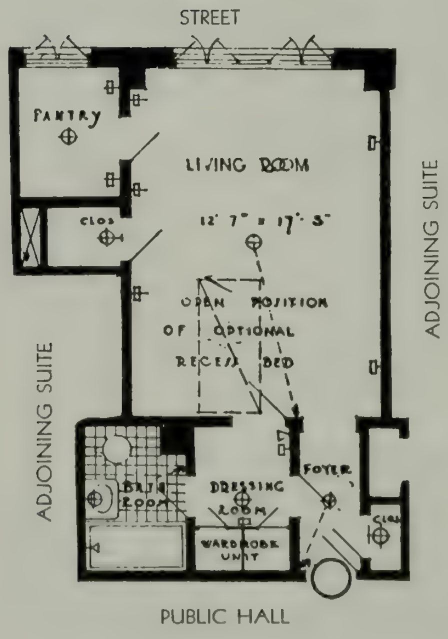
4. Variation of Type 1. One-room type with corner light secured by court frontage. Twin in-a-door beds. Cooking facilities in alcove at end of living room.

WINDSOR TOWER, TUDOR CITY, NEW YORK CITY
FRED F. FRENCH CO., ARCHITECTS



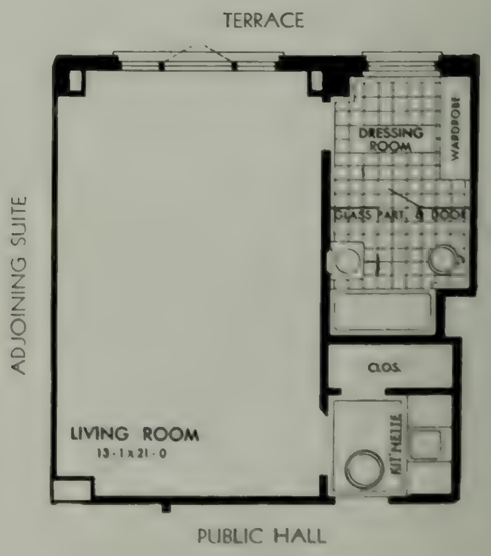
5. Variation of Type 1. The wide frontage of this living room is toward the southern yard. The in-a-door beds fold into the dressing room. The closet space is cramped because of the ducts made necessary by the interior bath.

THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS



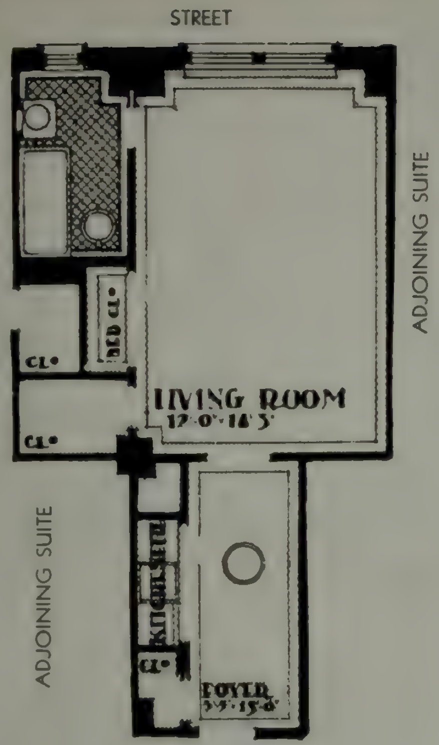
6. Variation of Type 3. A one-room apartment, intended for single occupancy, in the same building as above. It is necessary to cross the living room diagonally to reach the pantry although it has outside light.

THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS



7. The same type of planning as Type 2 except that the bath, instead of the kitchenette, is given outside air and developed into a practical dressing room by the use of a glass partition. The entry is unfortunately small to be encumbered by the kitchenette.

THE MAJOR LANE, 148 EAST 48TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS

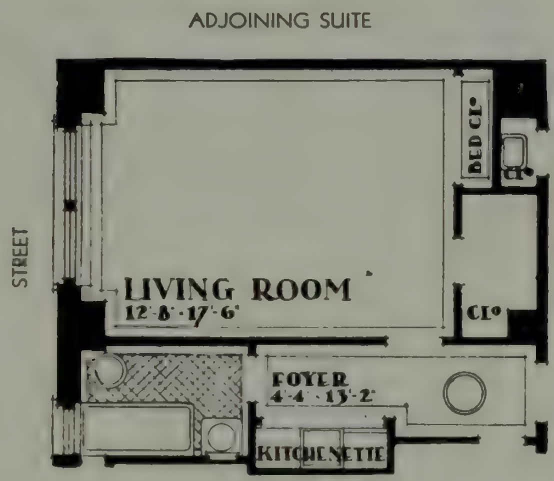


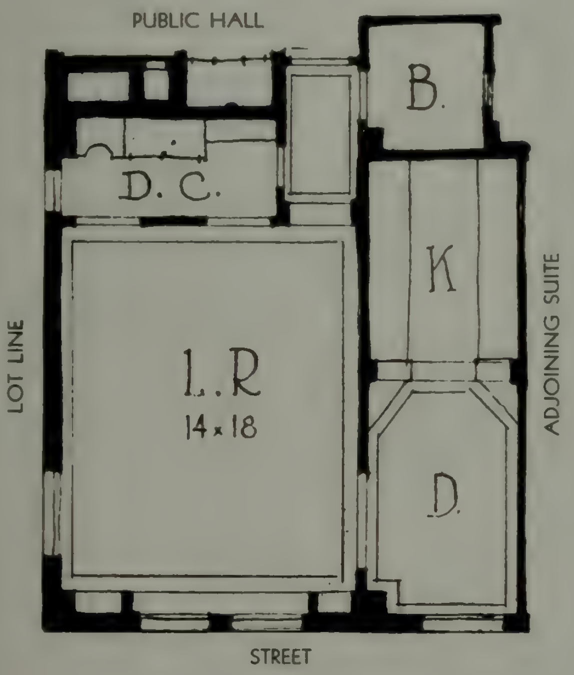
8. A similar type to that of preceding plan except that the foyer, although still encumbered by the kitchenette, is ample in size.

205 EAST 78TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS

9. A still further development of the same plan. The foyer is so arranged that one need not pass the stove to enter the living room, and the bath is placed at the end of the foyer instead of being entered from the living room.

205 EAST 78TH STREET,
NEW YORK CITY
SUGARMAN AND BERGER,
ARCHITECTS



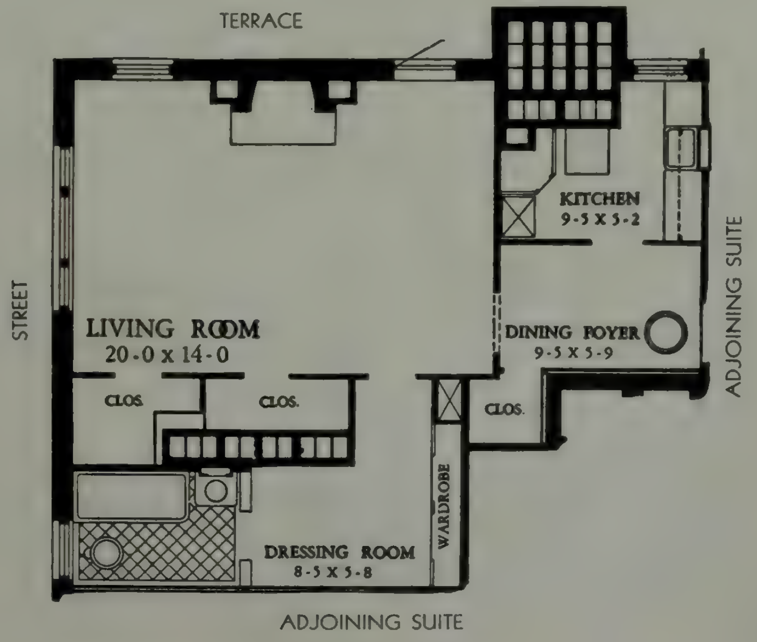


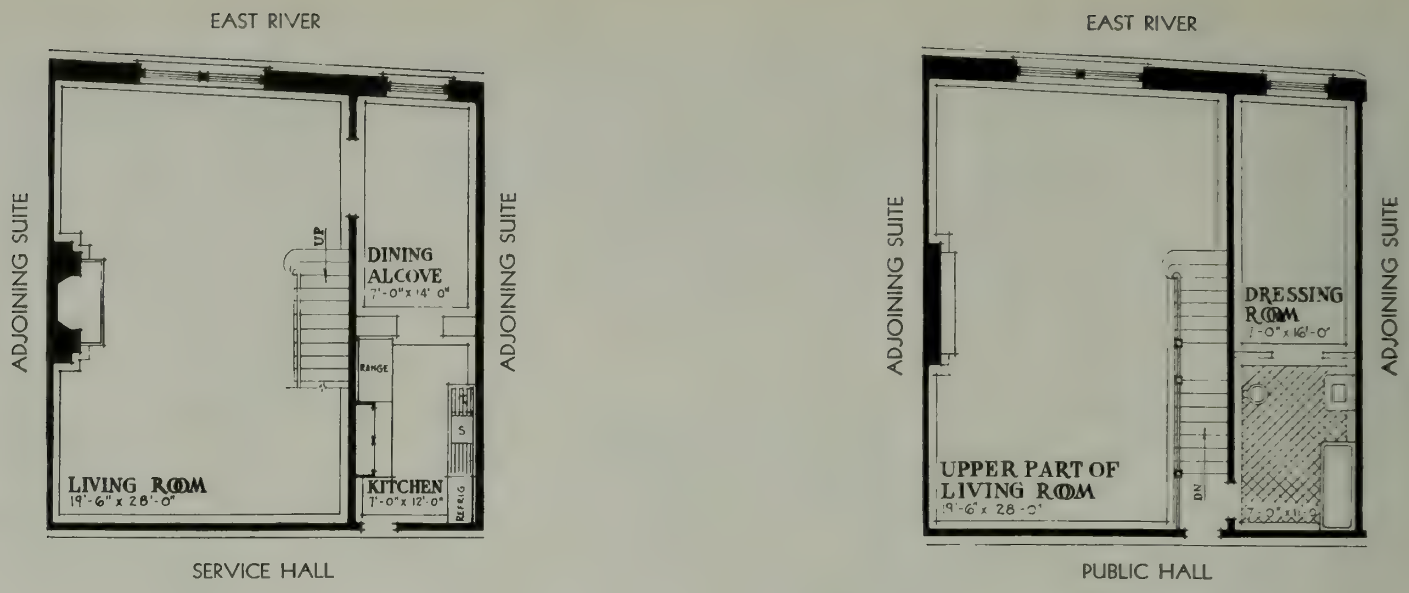
10. Living room and dinette type, where the dining alcove has outside air. In-a-door beds are provided with space fitted up as a dressing wardrobe.

TUDOR HALL APARTMENTS, LAKE STREET, OAKLAND, CALIFORNIA
MILLER AND WARNECKE, ARCHITECTS

11. A city penthouse type, where the foyer is free of secondary facilities and the bath is approached through a commodious dressing room. Both kitchenette and bath enjoy outside air.

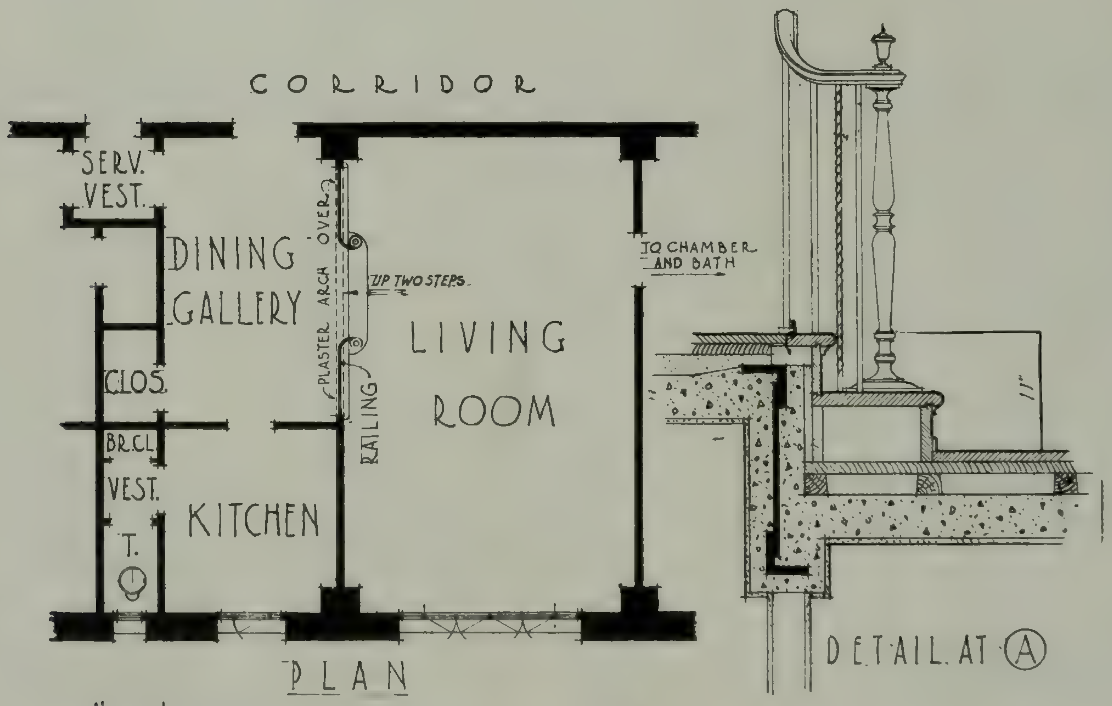
220 EAST 73RD STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT

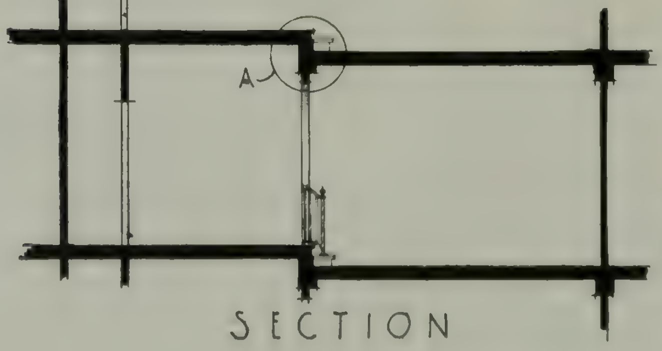




A special case where available space below grade with river view is utilized to produce a double-height living room. The kitchen is entered at the lower level. The one objectionable feature is that the main entrance opens on a narrow landing where the entrance and bathroom doors are cramped for space.

ONE BEEKMAN PLACE, NEW YORK CITY
SLOAN AND ROBERTSON, ARCHITECTS; CORBETT, HARRISON AND MAC MURRAY
CONSULTING ARCHITECTS





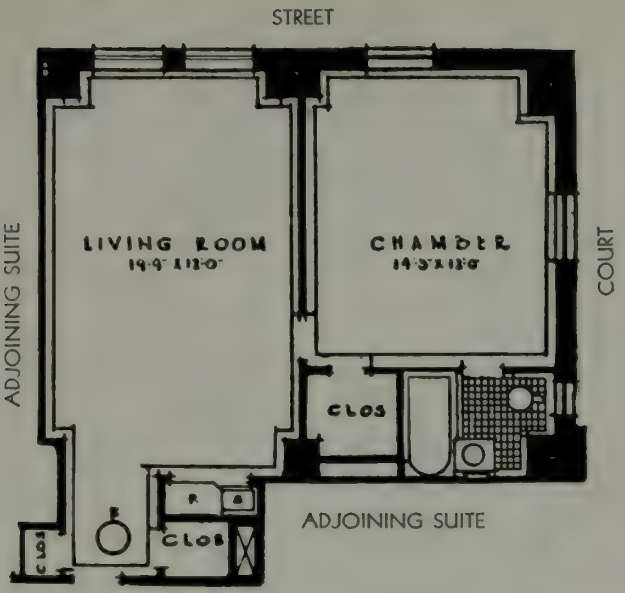
The living room is dropped two steps, giving a more definite division of space between the living room and the dining gallery. This feature has been found to have value in rentability of the apartment suite.

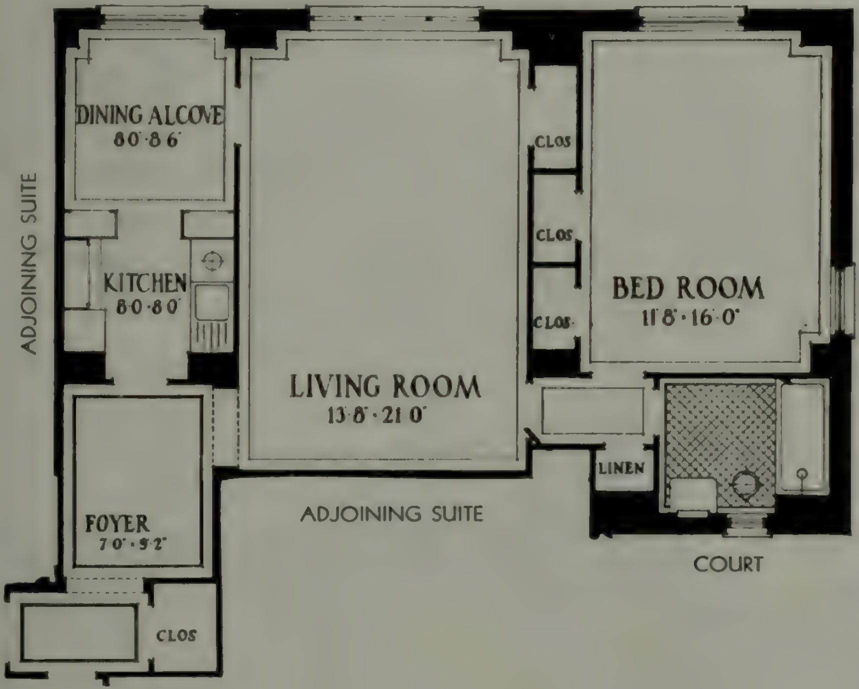
CENTRAL PARK WEST AND 66TH STREET,
NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS

TWO-ROOM APARTMENT PLANS

12. A compact two-room type, practically without foyer, and with kitchen cabinet at entrance end of the living room.

WINDSOR TOWER, NEW YORK CITY
FRED F. FRENCH CO., ARCHITECTS





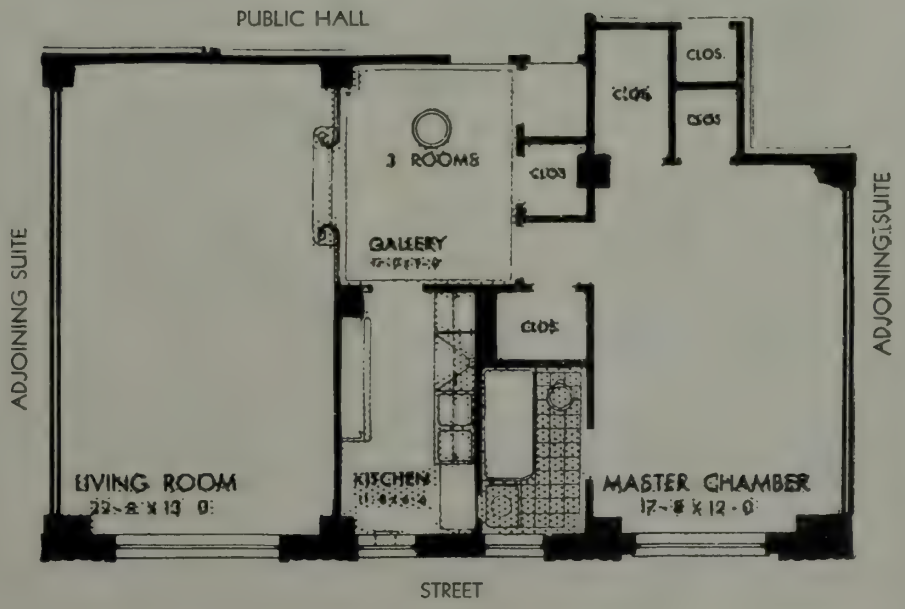
13. A straightforward two-room-and-dinette plan where separate access is provided from the foyer to either living room or kitchen. Privacy of the bedroom and bath is afforded by the second foyer.

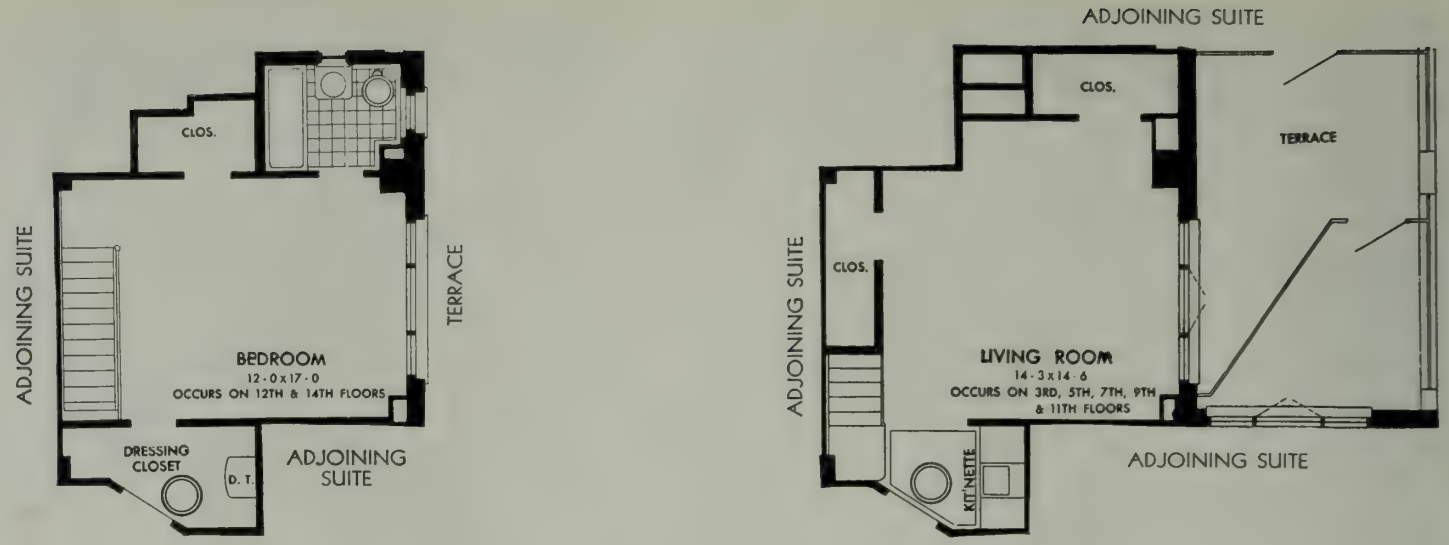
12 EAST 88TH STREET, NEW YORK CITY
ROSARIO CANDELA, ARCHITECT

14. A central foyer type where living room, kitchen and bedroom are all entered directly from the foyer. The living room has been dropped two steps below the level of the foyer. (See detail on opposite page.)

THE NEW AMSTERDAM, 200 WEST 86TH STREET, NEW YORK CITY

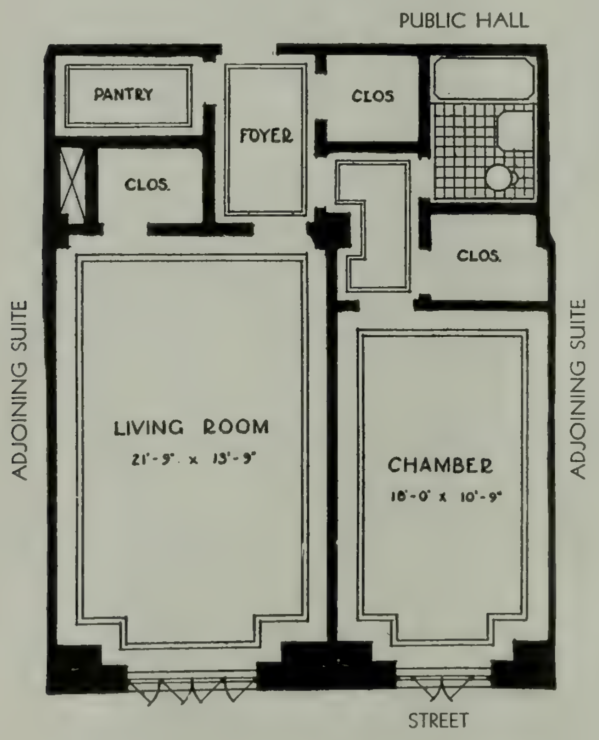
SCHWARTZ AND GROSS, ARCHITECTS





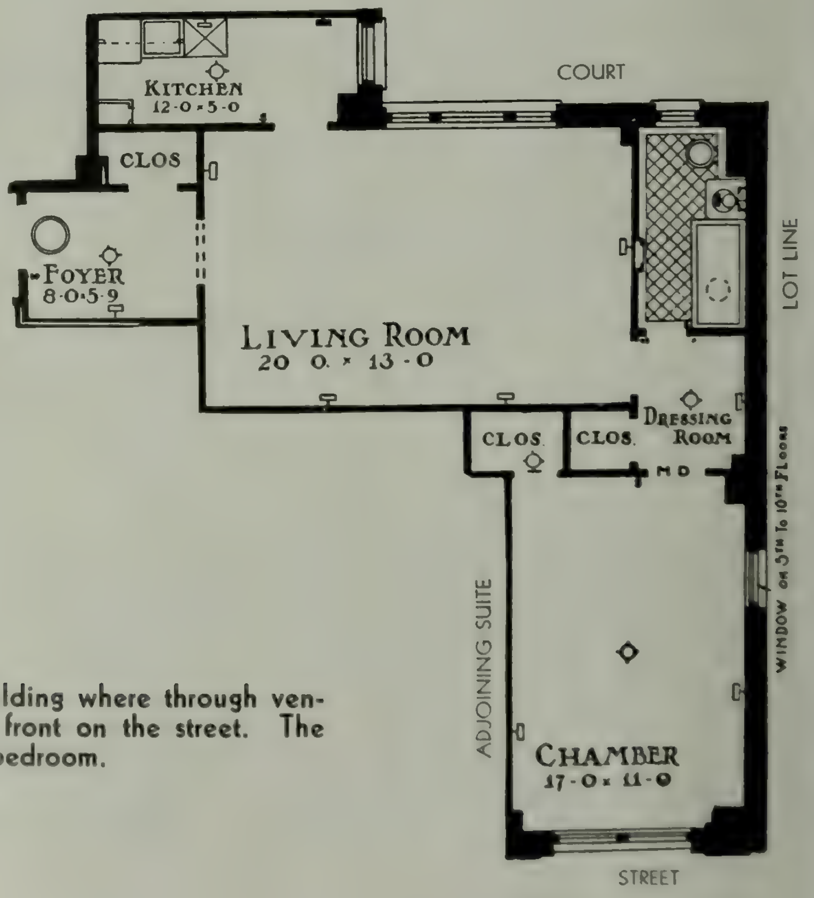
15A and 15B. An attempt to utilize vertical space for the two-room apartment where horizontal space accessible to the penthouse terrace is limited. The stair and kitchenette are cramped at the entrance.

THE MAJOR LANE, 148 EAST 48TH STREET, NEW YORK CITY
SUGARMAN AND BERGER, ARCHITECTS



16. Central foyer type with narrow frontage on the outside, forcing both kitchenette and bath to the interior.

THE BRITTANY, 55 EAST 10TH STREET, NEW YORK CITY
FARRAR AND WATMOUGH, ARCHITECTS

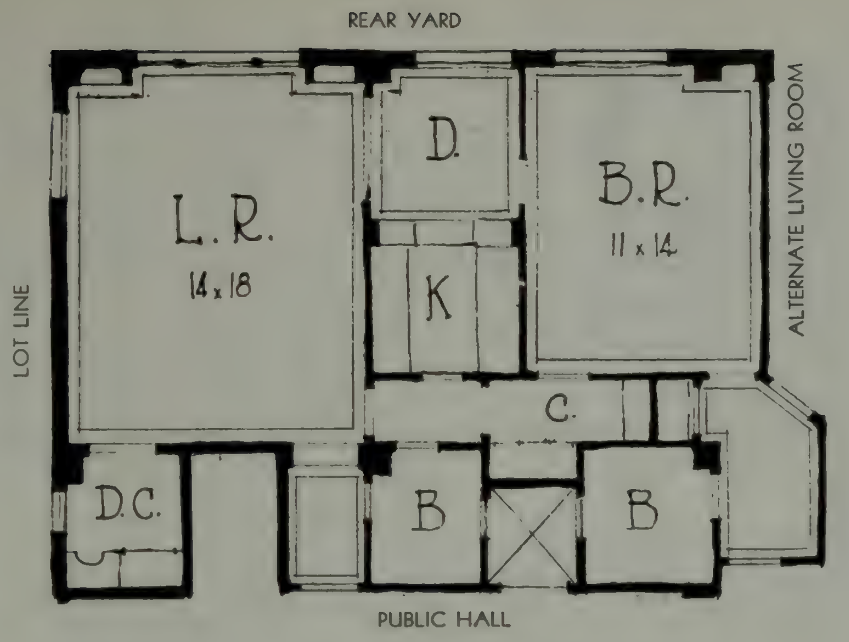


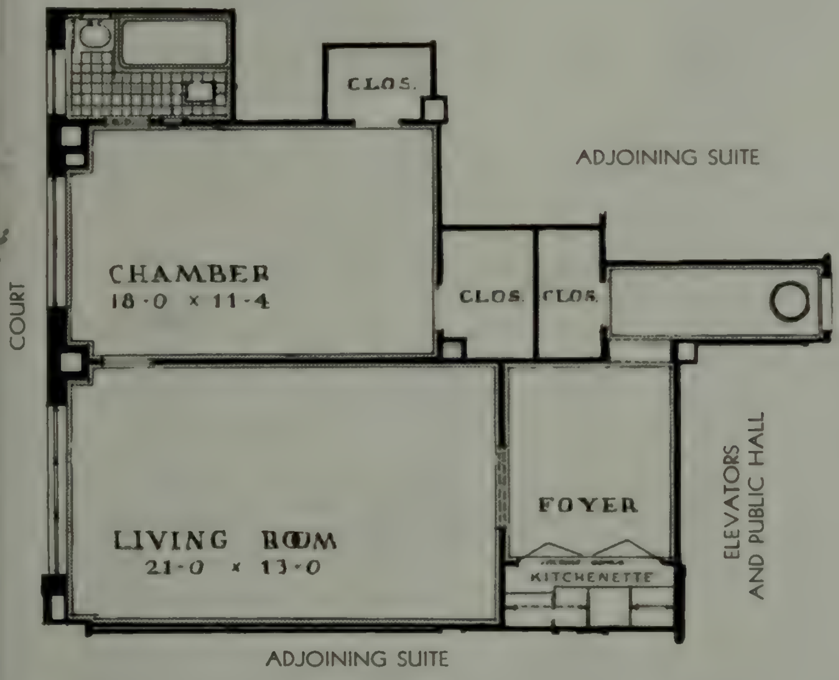
17. A two-room apartment in an H-shaped building where through ventilation is possible. The living room does not front on the street. The secondary foyer gives privacy to both bath and bedroom.

319 EAST 50TH STREET, NEW YORK CITY
GEORGE G. MILLER, ARCHITECT

18. A Western type of plan, where baths and bedroom are so arranged with respect to the entries that the bedroom may be rented in connection with the living room on either side.

TUDOR HALL APARTMENTS, LAKE STREET, OAKLAND, CALIFORNIA
MILLER AND WARNECKE, ARCHITECTS



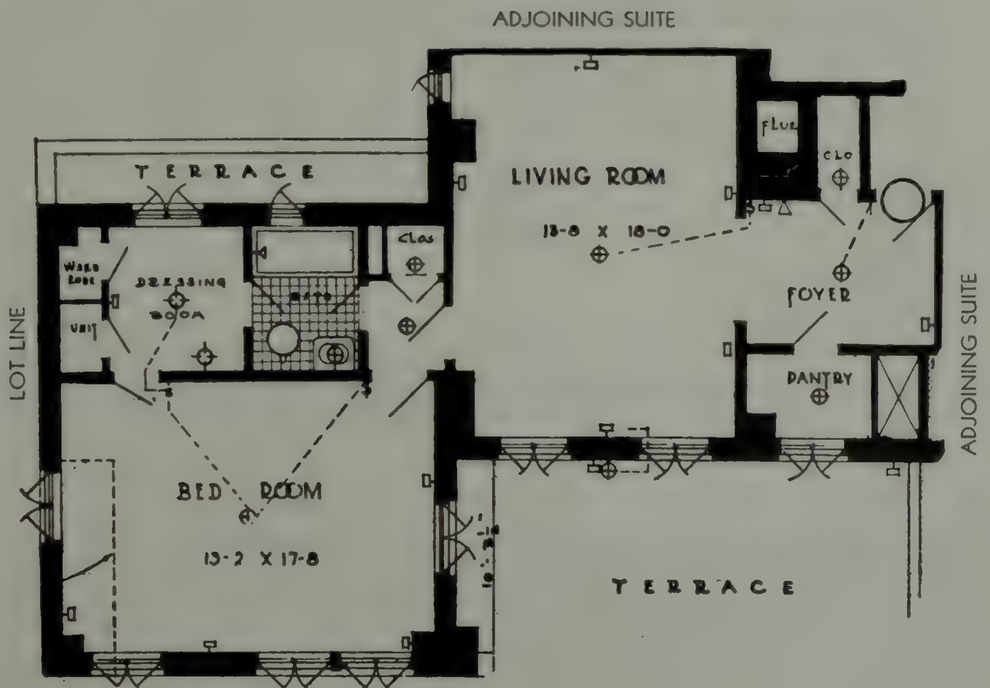


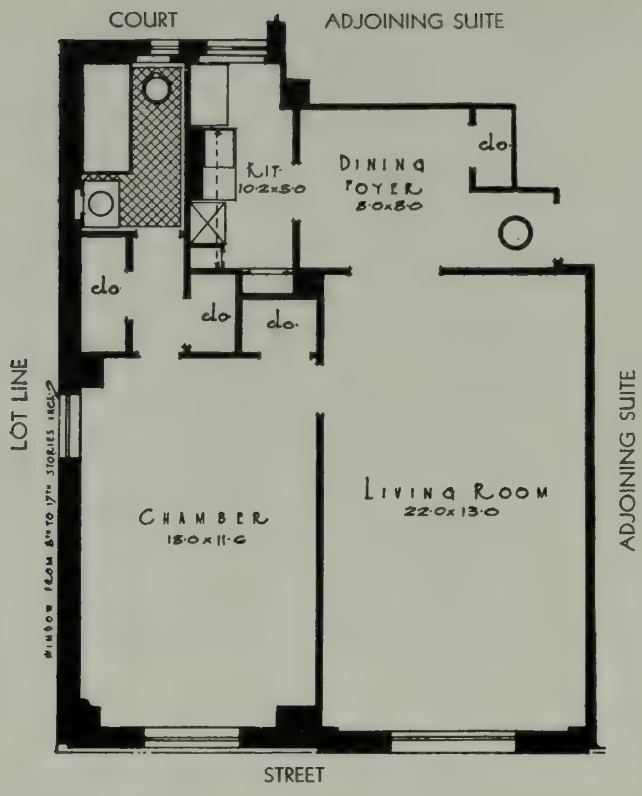
19. The angle type of foyer which widens out sufficiently to permit dining facilities. It is necessary to walk the length of the living room to enter the bedroom and then to cross the bedroom to enter the bath.

414 EAST 52ND STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT

20. A through ventilation type which becomes possible at penthouse levels. The pantry has both outside light and privacy. The second foyer protects both bath and bedroom, and the dressing room is isolated.

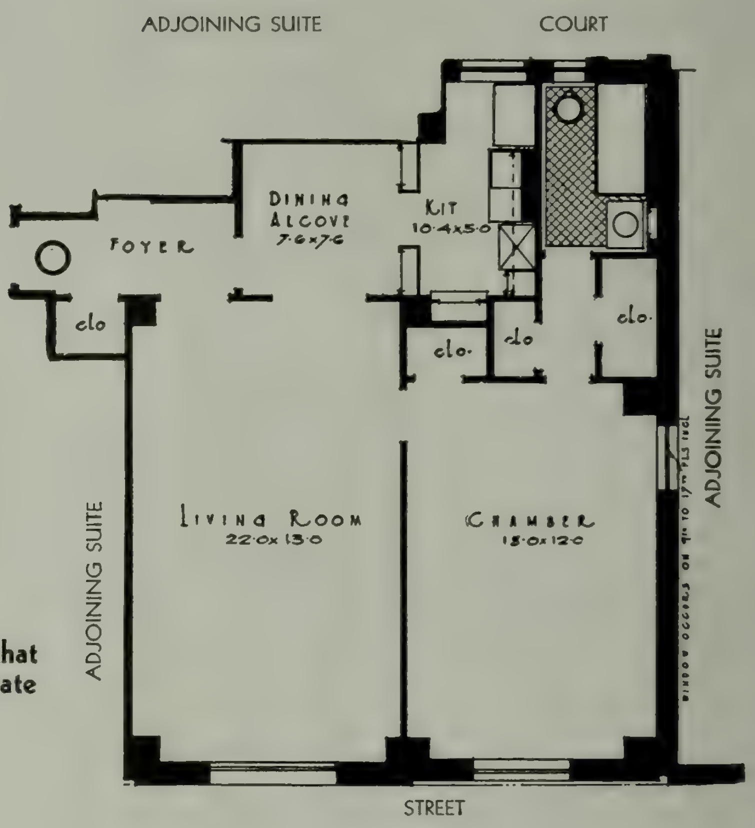
THE TOWN HOUSE, 108 EAST 38TH STREET, NEW YORK CITY
BOWDEN AND RUSSELL, ARCHITECTS





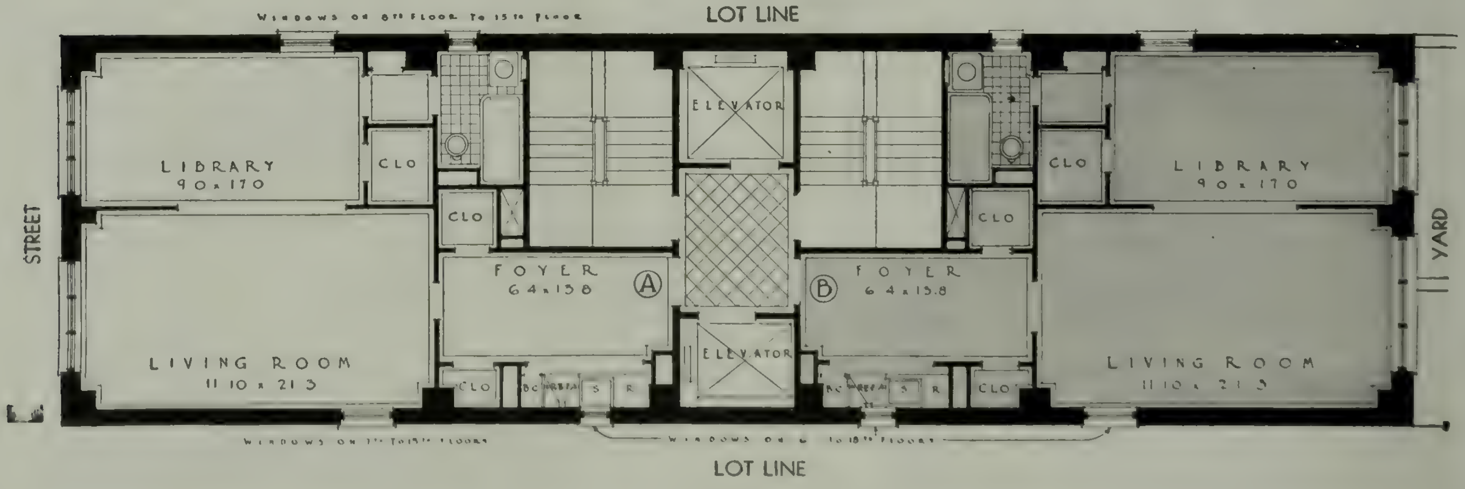
21. A square foyer does duty for dining. Both kitchen and bath have access to the outer air, but the bath cannot be reached from the living room without passing through the bedroom.

227 EAST 57TH STREET, NEW YORK CITY
BOAK AND PARIS, ARCHITECTS



22. The same type and plan as above, except that the foyer has been expanded to provide separate dining alcove.

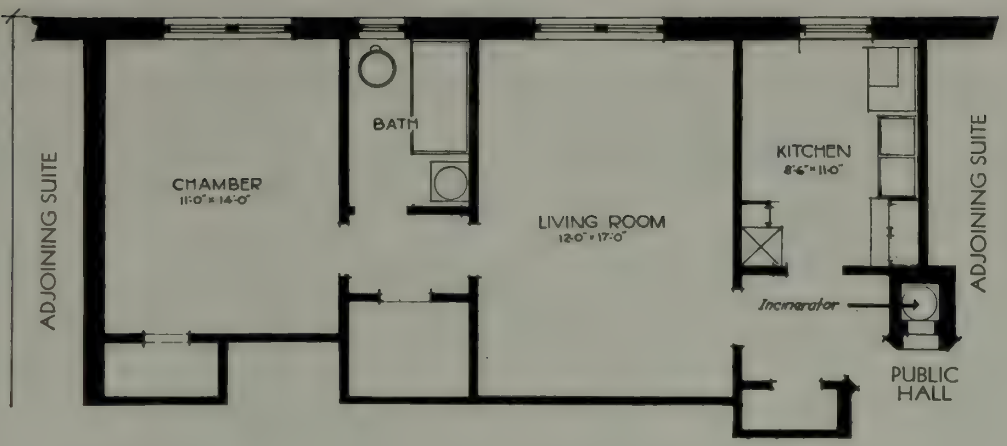
227 EAST 57TH STREET, NEW YORK CITY
BOAK AND PARIS, ARCHITECTS



23. A narrow lot type, where almost a third of the building space is taken up with service facilities. Baths and kitchenettes take temporary advantage of borrowed light over the lot line.

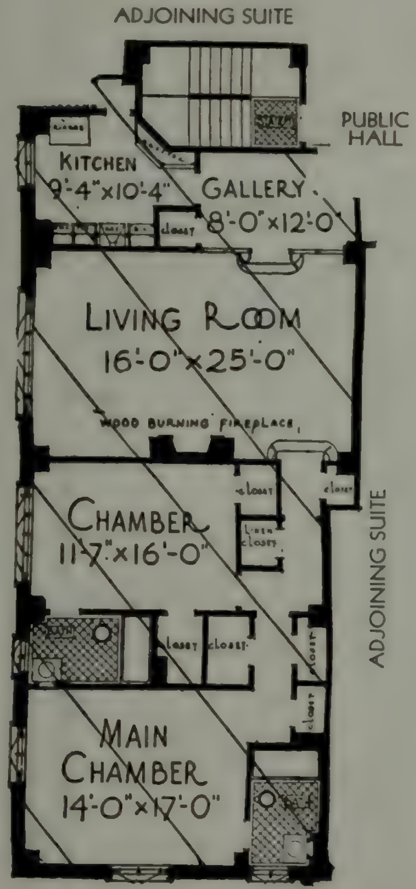
GREEN PARK, 7 PARK AVENUE, NEW YORK CITY
EMERY ROTH, ARCHITECT

APARTMENT PLANS OF THREE AND MORE ROOMS



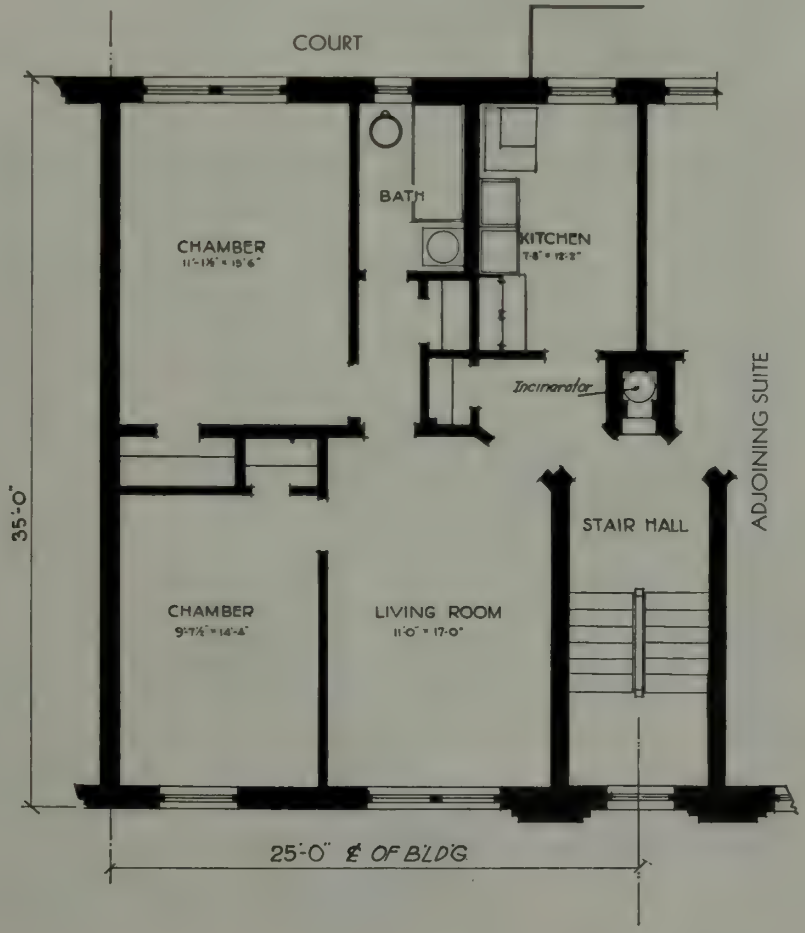
24. A 3-room type. Generous frontage for a narrow apartment. The kitchen is increased to the size of a small room. The living room must be crossed to enter the bedroom or the bath.

PHIPPS GARDEN ESTATE, SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



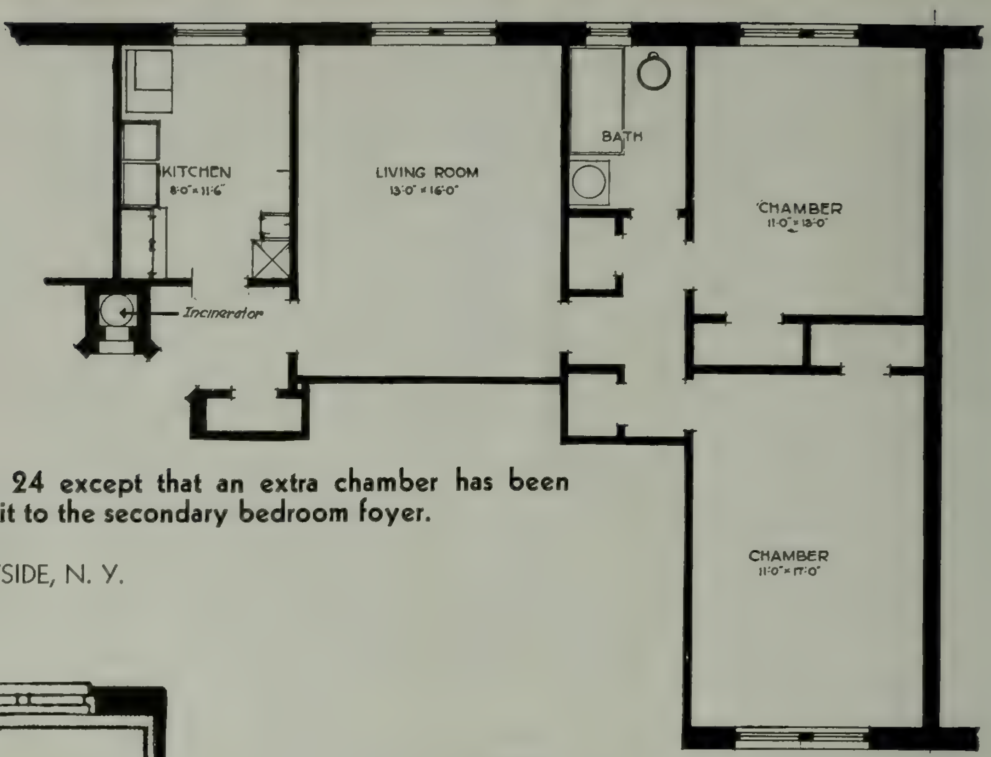
25. A 3½-room type. The living room must be crossed to reach the two sleeping rooms, each of which is provided with a bath ventilated to the outer air. The floor of the living room is two steps below the rest of the apartment.

180 EAST 79TH STREET, NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS



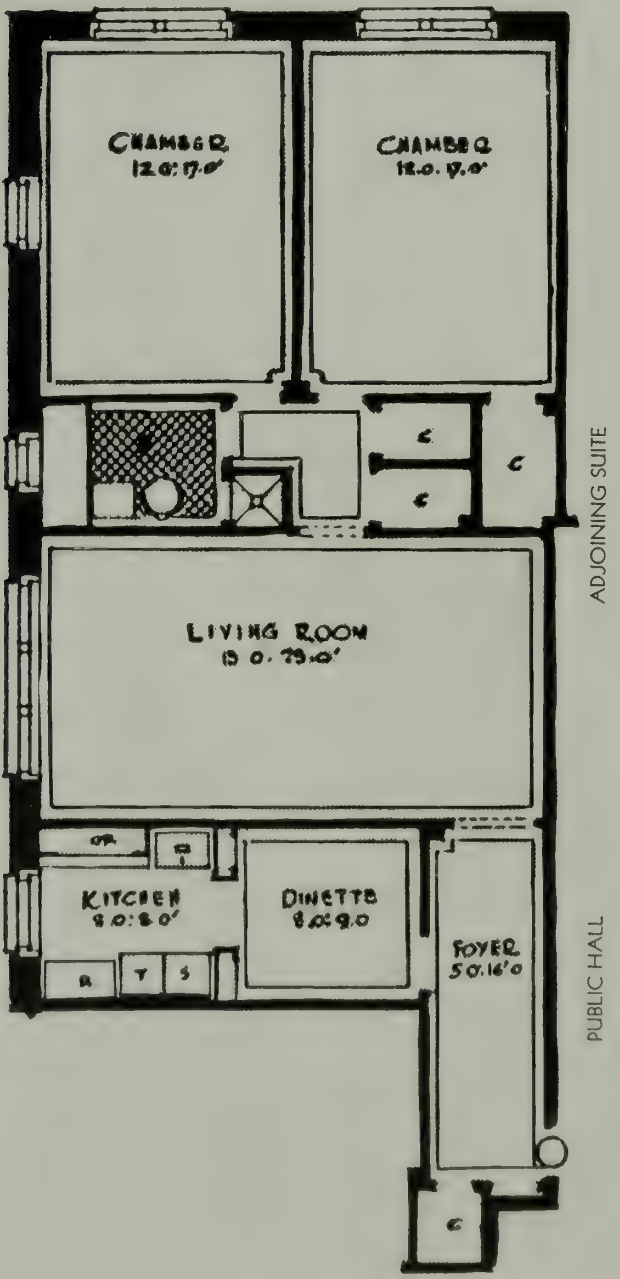
26. A 4-room type. The second chamber is isolated from the single bath which can be reached only by passing through the living room.

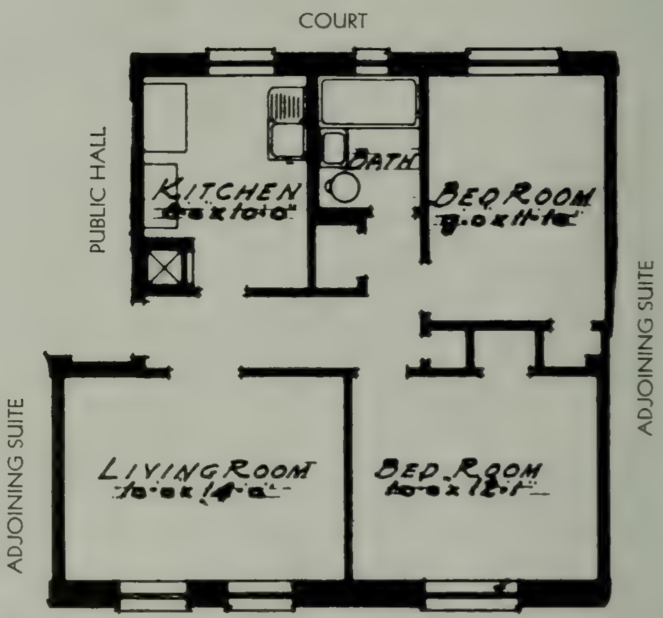
PHIPPS GARDEN ESTATES
SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



27. A 4-room type, similar to 24 except that an extra chamber has been added at the rear by connecting it to the secondary bedroom foyer.

PHIPPS GARDEN ESTATES, SUNNYSIDE, N. Y.
CLARENCE S. STEIN, ARCHITECT



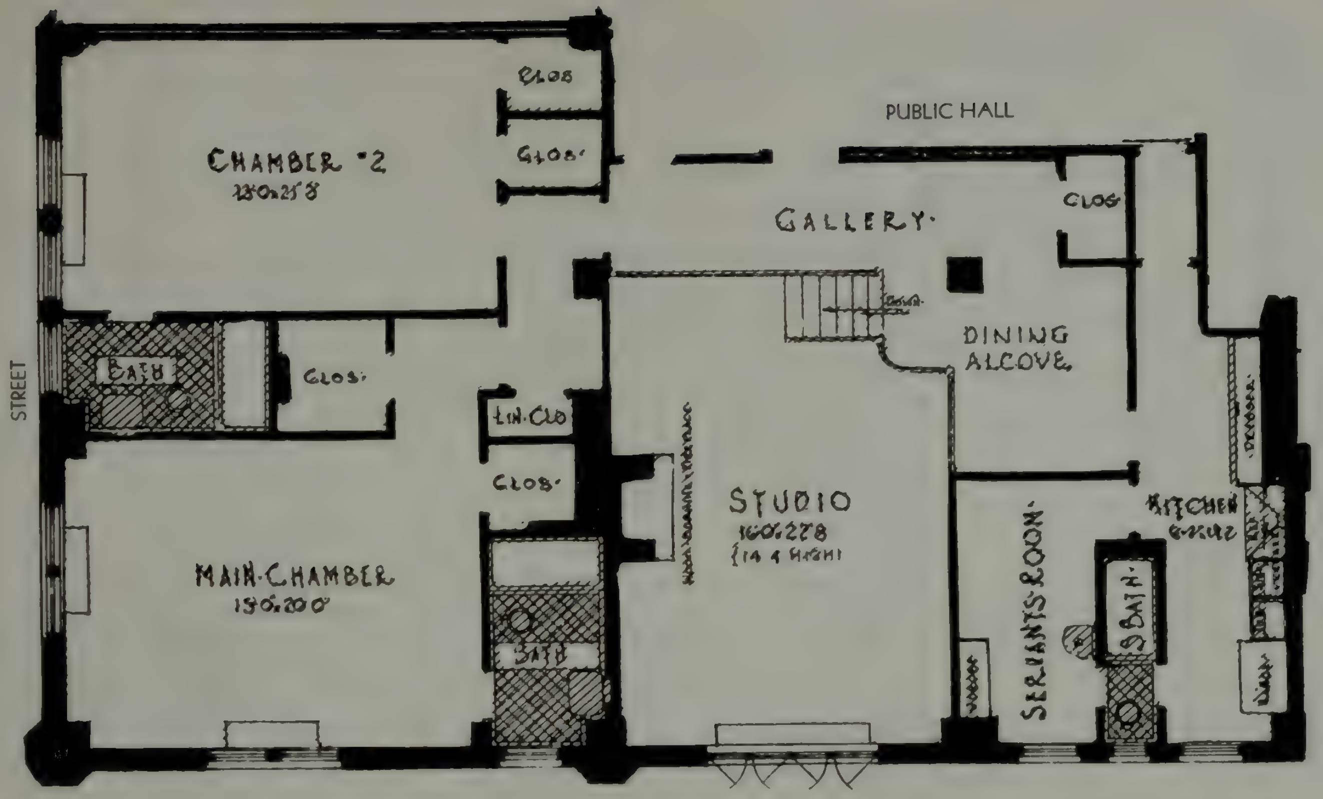


28. A 4-room suite where all rooms are so arranged that each may be entered separately from the central private hall without passing through any other room.

CHELLIS AUSTIN APARTMENTS, NEWARK, N. J.
EDMOND C. STOUT, ARCHITECT-ENGINEER

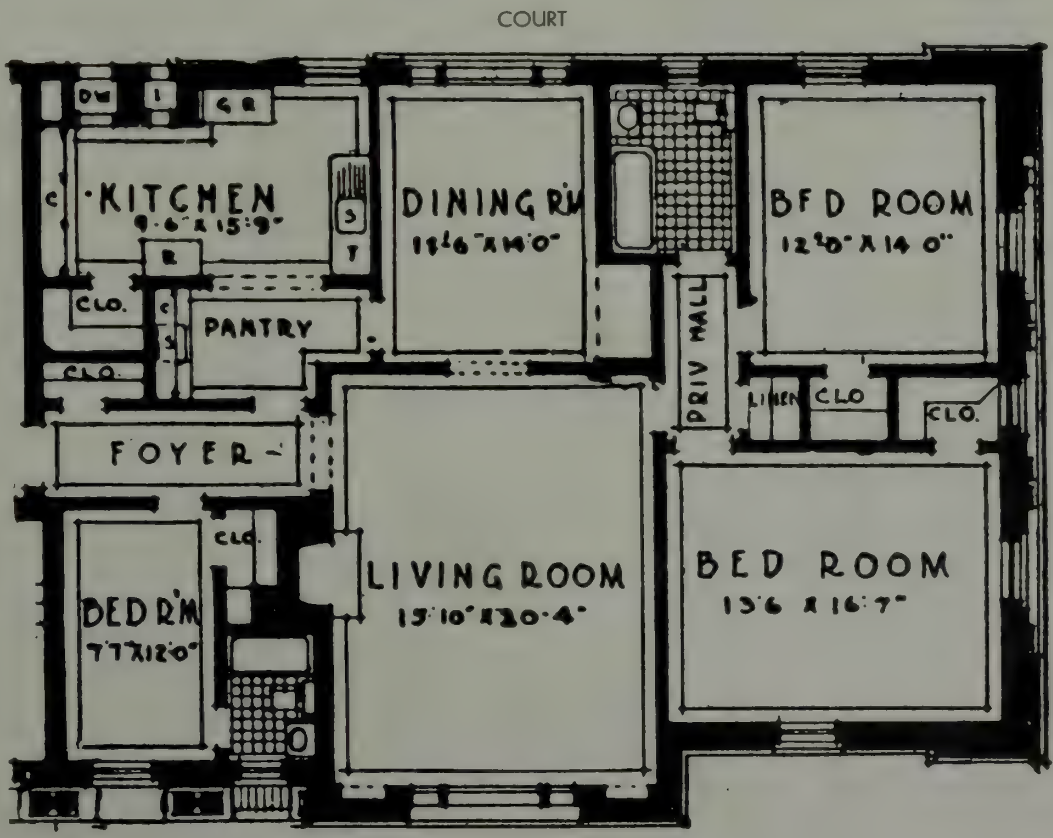
29. A 4-room suite, corner type. Emphasis has been placed upon size of living room. Bedrooms and cooking facilities are given adequate privacy.

111 HARRISON STREET, EAST ORANGE, N. J.
WARREN AND WARREN, ARCHITECTS



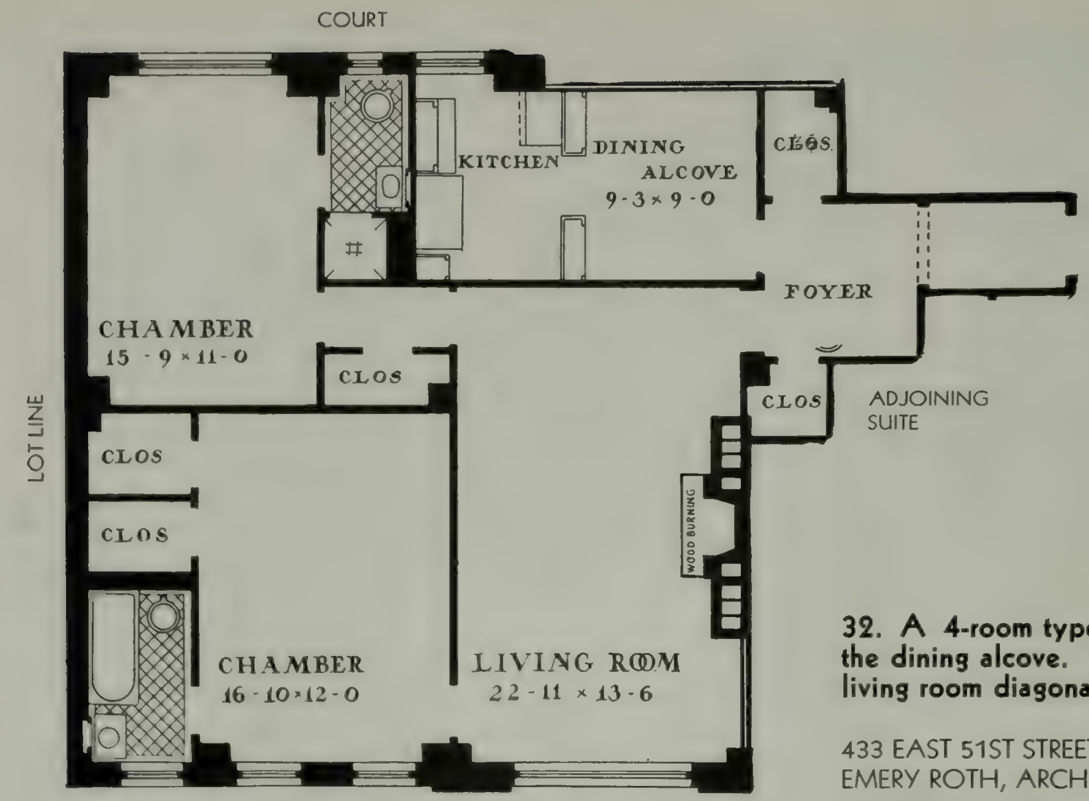
30. 5-room studio type. Entrance is by a gallery overlooking the studio, which is sunk 4 feet below the level of the rest of the apartment in order to get greater head room. The two bedrooms, each with an individual bath, are well arranged for privacy. Dining facilities are provided on the balcony overlooking the living rooms. A servant's room and bath have been added.

14 EAST 75TH STREET, NEW YORK CITY
SCHWARTZ AND GROSS, ARCHITECTS



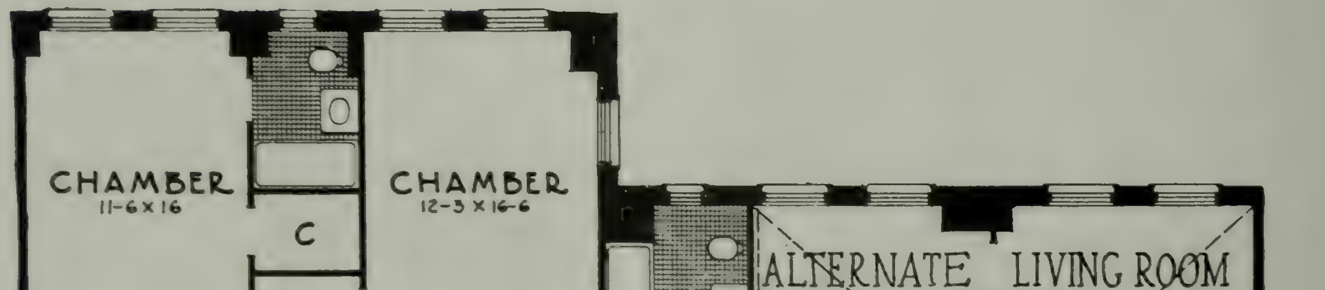
31. A well-planned 6-room apartment, where light has been provided on three sides. The servant's bedroom opening off the entrance foyer is so arranged that it may be used optionally as a third master bedroom.

BRONXVILLE, NEW YORK
PENROSE V. STOUT,
ARCHITECT



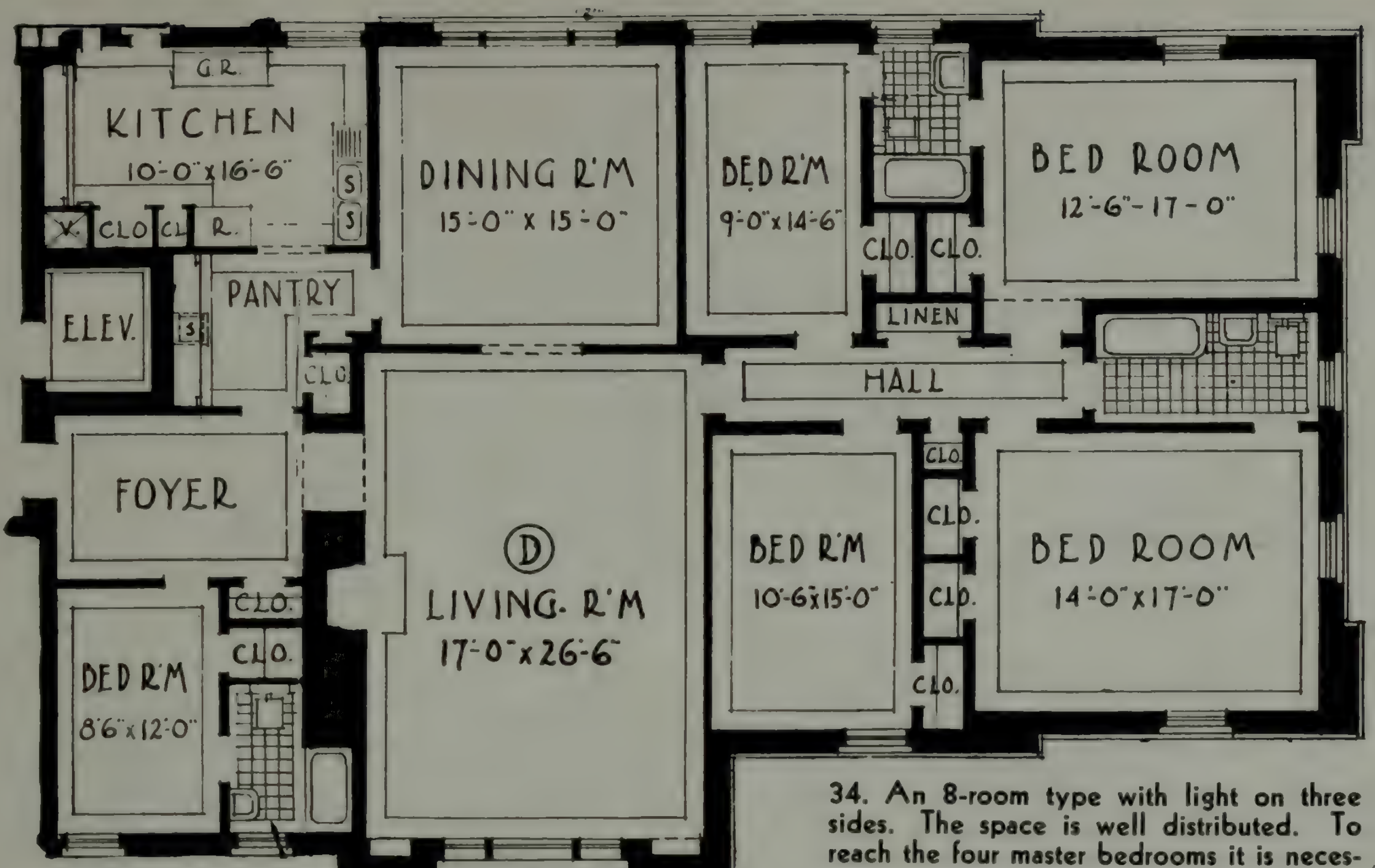
32. A 4-room type where privacy is given to the dining alcove. It is necessary to cross the living room diagonally to enter one bedroom.

433 EAST 51ST STREET, NEW YORK CITY
EMERY ROTH, ARCHITECT



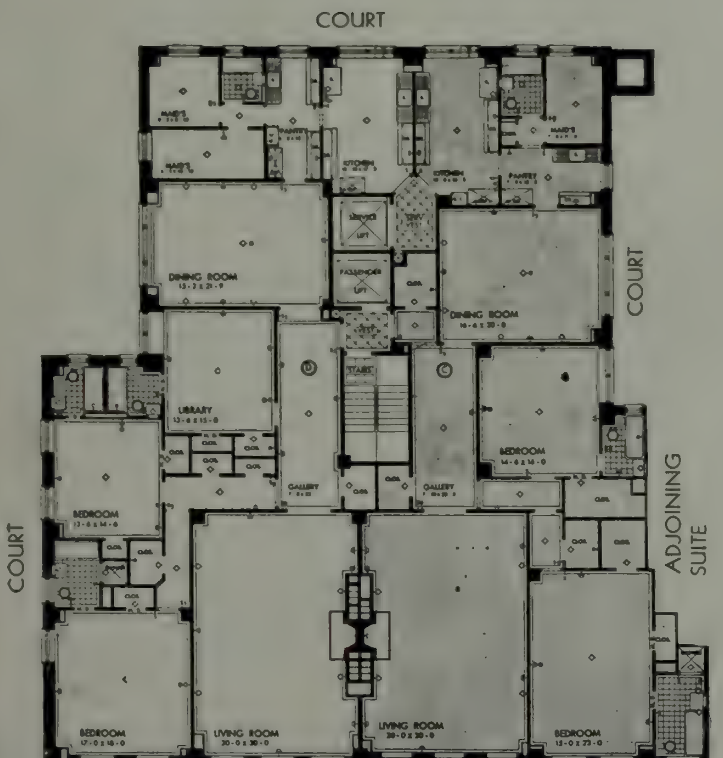
33. A suburban type of 7-room apartment where an extra-large living room may be gained by combining the library and gallery with the existing living room.

75 PROSPECT STREET, EAST ORANGE, N. J.
ARTHUR C. HOLDEN, ARCHITECT



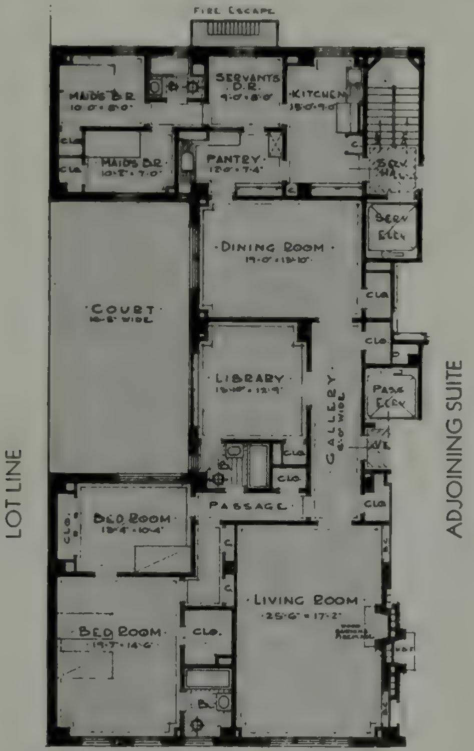
34. An 8-room type with light on three sides. The space is well distributed. To reach the four master bedrooms it is necessary to traverse the living room.

"THE GEORGIAN," BRONXVILLE, N. Y.
PENROSE V. STOUT, ARCHITECT



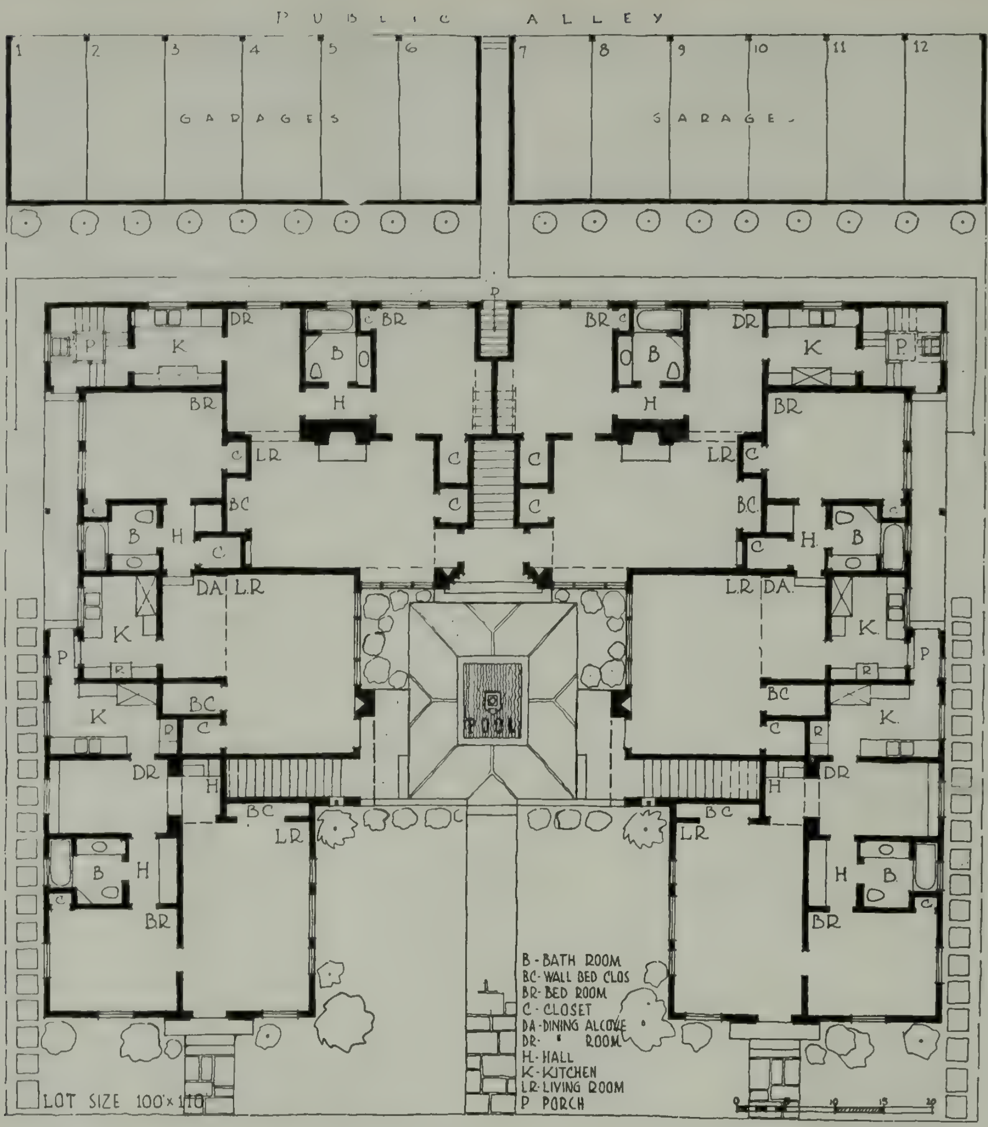
35. An 8-room type on the left and a 6-room on the right. In each the centrally located gallery is the key to the plan. Living room and dining room are located at opposite ends. Bedrooms are entered from the side of the gallery through a secondary entry.

1100 PARK AVENUE, NEW YORK CITY
DE PACE AND JUSTER, ARCHITECTS



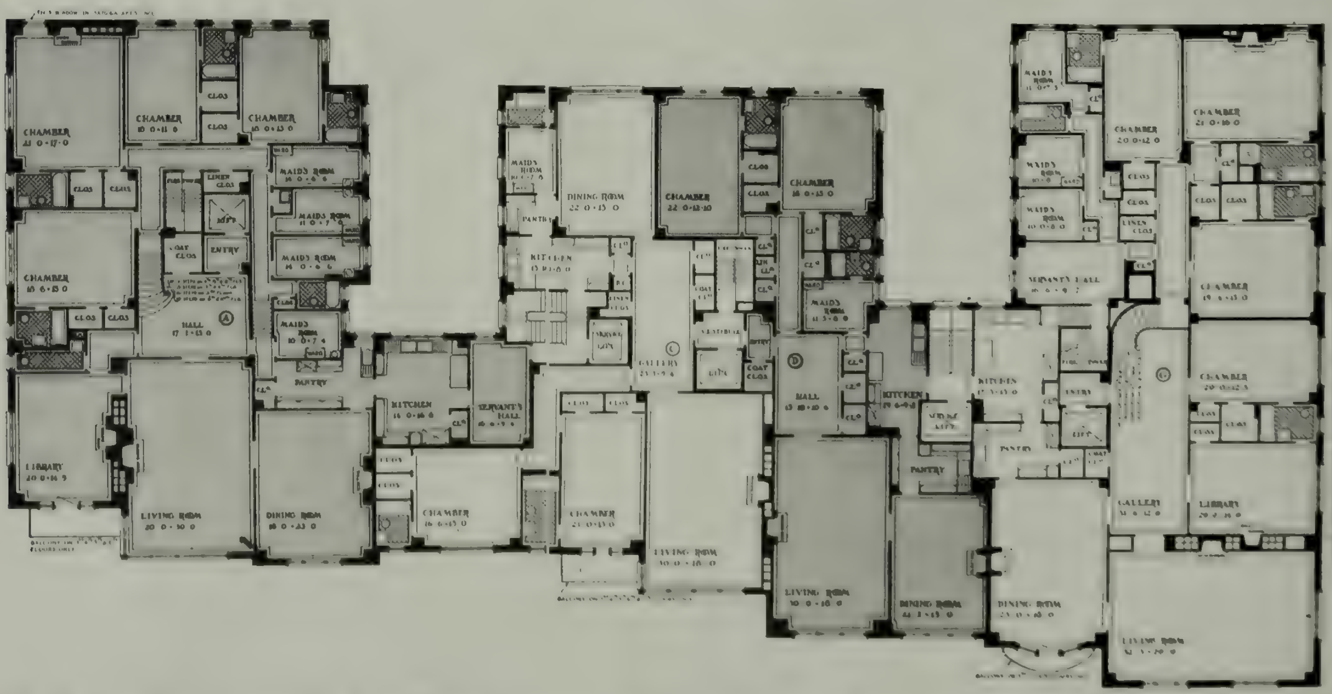
36. The lower half of this building contains two 9-room apartments on each floor. The service is forced to the rear yard, where the light is overshadowed.

117 EAST 72ND STREET, NEW YORK CITY
KENNETH M. MURCHISON, ARCHITECT



37. A California type, 2-story apartment, containing 3- and 4-room units, built round an open patio. The sides of the building come very close to the lot line.

AUDUBON APARTMENTS
LOS ANGELES
FRANZ HERDING,
CITY PLANNING ARCHITECT
GEORGE J. ADAMS,
ARCHITECT



38. A maximum number of southeast corners with balconies on the waterfront are provided. The two middle apartments have 6 rooms. The two large end apartments are duplex. The rear sections containing the sleeping rooms are raised from four to twelve steps (depending on the location) above the living and dining rooms. Greater headroom is thus provided for the latter.

10 GRACIE SQUARE, NEW YORK CITY
VAN WART AND WEIN, ARCHITECTS

OFFICE PROCEDURE, 2

By PARKER MORSE HOOPER

THE OFFICE MANUAL OF JOHN RUSSELL POPE, ARCHITECT*

WORKING HOURS

TIME RECORDS—Time records shall be filled out each night before leaving, giving to within one half hour the time spent on different jobs. For the convenience of the bookkeeping department, the time shall be put under one of the following headings and the job name stated:

Sketches
Competition drawings
Working drawings
Scale and full size details
Specifications
Supervision
General (seeing materialmen, etc.)
New business
Revising drawings and preparing supplements

OFFICE HOURS—During the months of September to May, inclusive, the office hours will be from 9 a.m. to 12:45 p.m. and from 1:45 p.m. to 5:15 p.m., except Saturdays, which shall be from 9 a.m. to 12:45 p.m. During the months of June to August, inclusive, the office hours will be from 9 a.m. to 12:45 p.m. and from 1:30 p.m. to 5:35 p.m., except on Saturday, when the office will be closed.

The following legal holidays will be observed and the office will be closed on these days:

New Year's Day, January 1
Lincoln's Birthday, February 12
Washington's Birthday, February 22
Memorial Day, May 30
Independence Day, July 4
Labor Day
Columbus Day, Oct. 12
Election Day
Thanksgiving Day
Christmas Day, Dec. 25

OVERTIME WORK—Overtime work shall be done only when authorized by the Chief Draftsman and commenced and terminated each day at such hours as stated by the Chief Draftsman. Authorization *must* be obtained each day. Payment will be made at the unit hourly base of the weekly salary. Where overtime consists of three hours or more in sequence, in the evenings, clerks will receive $1.00 and draftsmen and others $1.50 for supper money in addition to their overtime pay. Special arrangements will be made for midday meals when overtime occurs on Sundays or holidays. Place on time sheets only exact number of hours worked.

EXPENSES—Whenever trips are required outside of New York City on office business, an itemized statement of expenses made out on a trip ticket shall be given to the bookkeeping department for payment. Whenever local carfares, taxi or other small expenditures are made within New York City in the course of office business, a statement shall be made out on the Petty Cash Receipts form and given to the bookkeeping department for payment. Whenever on government work, receipts must be obtained for all expenditures.

HINTS FOR DRAFTSMEN

BATHROOM FITTINGS AND ACCESSORIES—Should always be included under cash allowances.

BATHS—General lighting to be by ceiling fixture controlled by switch at door. Mirror lighting should ordinarily be by bracket outlets on each side of mirror with pull socket or key socket control. In residence work, electric room-heating devices are frequently desirable to obviate premature operation of house heating system.

BLINDS, SHUTTERS—Ascertain requirements, allowing space to install, particularly if Venetian blinds are desired.

CLOSETS—Closet floors should be ½" higher than floor of room adjoining, with saddle flush on closet side.

CURTAIN POCKETS—Provision should be made in master's living portion of all residence buildings, and in special suites of other types of buildings.

DAMP-PROOFING—Always to be provided for all subgrade structures except where local conditions permit omission. Also under all toilet or bathroom floors, around showers, under all flat or nearly flat roof finish and on inside or outside of all walls subject to extreme weather conditions.

DOORS—Door swings must be carefully studied to avoid conflict.

In bedrooms hinge jamb should be toward bed location, in baths toward W.C. location. Closet doors to swing to admit daylight where possible.

EXITS—Arrange door swings with relation to exits for all commercial or multiple occupancy buildings.

FIREPLACES—Flue area to be not less than 1–15th of fireplace opening. No bends sharper than 45 degrees. Use Covert old-style damper and smoke chamber. Jambs of all fireplaces to be splayed from line of facing unless otherwise directed. All flues to be lined with terra cotta pipe.

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*The first half of this office manual appeared in the February issue of the RECORD, pages 177-182.

FIREPROOFING—Allow 2″ over steel in all shafts, on columns and on bottoms of girders. Allow 4″ of terra cotta for enclosing all ducts penetrating floors.

FLOOR THICKNESS—Allow a minimum of 4½″ from top of floor steel to finished floor, except where pipe and conduit layouts permit standardized decrease.

HARDWARE—Hardware should be selected at earliest practicable moment, as it affects detailing of doors, etc. Particular study must be given to holding devices for casement windows.

HEATING—In residence work heating of service portion should be arranged to permit operation independent of master's portion. Provide for concealed radiation.

HUNG OR FURRED CEILINGS—Allow at least 4″ from bottom flange of steel work to finish line of hung ceiling. Check for plumbing requirements.

KITCHENS—Provide separate hood vent as well as flue for products of combustion. Ascertain if electrical cooking devices are to be used. Make provision to prevent grease clogging waste pipes from sinks. Make provision for removal of garbage by incineration or other suitable means.

LAUNDRIES—Provide space and outlets for mechanical washing machine, mangles and electric irons, and provision for clothes drying, both indoors and out. Show vent duct for laundry dryer on construction plans.

LEVELS—All floor levels should be noted with reference to fixed datum plane, with datum bench mark located where possible.

MUNTINS—Always to be of minimum practicable section unless otherwise directed. This applies equally to all parts of wood or metal windows. Determine whether lead cames or steel muntins are desired for steel casements.

PIPING—Increased thickness of partitions to cover piping plus insulation.

PLINTHS—The use of plinths must always be given special consideration, as elimination will frequently benefit the appearance of the work where practical reasons do not exist for retention. Avoid plinths when using hollow metal, combined buck and trim.

RECEPTACLES—Should be located ordinarily about 15″ above finished floor where the plug itself can readily be reached, to avoid short circuit from pulled wires, water, etc., and where protected from damage by moving furniture.

SADDLES—No raised saddles are to be provided except where specifically instructed, and where necessary for practical reasons. Standard height of saddles where used ⅝″ above finished floor. Provide proper width for floor hinges where required.

SCREENING—Ascertain if local conditions require fly or mosquito screening, and make suitable provision for same.

SHOWERS—Valves must always be located for control without entering shower.

SOUND DEADENING—Provide special sound deadening to meet all hazards.

SPECIAL FINISH—Make clear limits of preparatory work for "Special Finish" Rooms.

SWITCHES—To be located for convenience and to be as inconspicuous as possible, generally close to trim. Do not place in trim unless specially detailed for.

TUBS—Provide for access to overflow and waste mechanism unless "Accesso" type of waste is used.

WEATHERSTRIPS—Make provision for all exterior openings in all cases.

WINDOW SILL HEIGHT—Unless otherwise directed, glass line in buildings of three stories or more should be 3′–0″ above finished floor. Mark all items to be purchased under Cash Allowances "A." Mark all other items on drawings but not to be included "N. I. C." (Not in Contract).

CHECKING LIST

In the inclusion of an item always consider and *check the relation to work of other trades involved as:*

CURB and building line levels and sidewalk grades.

FLOOR levels and column centers.

LOCATION, width and height of all openings, exterior and interior, heights of ceilings, transoms, soffits, locations of all columns, struts.

INTERIOR dimensions to be to rough construction—allow ¾″ for plaster, 2″ for marble or wood paneling, 1½″ for tile.

MATERIAL, dimensions, bond, finish, ornament and extent of all exterior finish.

STORAGE—Provide adequate receiving and shipping facilities and storage for building equipment, trunks, etc.

TOILETS, LOCKERS—Provide for building help, servants, etc.

CEILING LIGHTS—Provision to be made for easy cleaning both sides.

SIGNS, tablets, inscriptions, statues, street numbers, flashings, outside blinds or screens, storm sash, awnings, flower boxes, stone wheel guards.

THICKNESS of surface finish and depth of all returns, reveals, etc.

HEAD room under all pipes, ducts, on stairs.

GUARDS for depressions in grade levels, moving machine parts, etc.

BRICK or stone masonry joints must come at level of supporting steel.

STONE lintel and sill bearings should not be over 4″ and 2″ respectively, to avoid settlement cracks.

EXCEPT where gutters are provided, all exterior top surfaces (other than shallow sills) which would hold ice or snow must be drained and arranged to prevent ice or snow falling.

ENCLOSED RADIATORS—This item affects the following: Heating, size of radiators, sheet metal, enclosure lining, insulation of enclosure, inlet and outlet registers, and frames.

ORNAMENTAL METAL—If enclosure is of cast or wrought metal, if register faces or frames are of special design.

CARPENTER WORK—If enclosure is of wood, trim, jambs, setting of hardware.

PAINTING—Inside of enclosure, register faces and frames, etc.

PLASTERING—Corner beads, depth of reveals.

HARDWARE—Provision for access to enclosure. Indication on small scale drawings can be limited to showing location, size and number included; the larger scale drawings to show the required construction in detail.

EXCAVATION

Areas
Catch Basins
Cesspools
Cisterns
Column Footings
Court Walls
Curbs
Elevator Pits
Existing Levels
Hydrant Pits
Material
Meter Pits
Pits—Plumbing and Heating
Porticos
Proposed Levels
Retaining Walls
Roadways
Service Lines
Sewerage
Steps
Sub-soil Drains
Survey, Plot Plan
Trenches—Piping
Tunnels
Wall Drains
Water Supply

In rock show finished net profile, including pits and trenches, column, or other foundation footings, allowing for waterproofing.

Furnish contractor with boring sheet.

Note—Top soil required.

Note—Disposal of excavated material if to be re-used adjoining structure.

FOUNDATIONS

Caisson	Piling	Sheath Piling	Spread
Depth	Depth	Drive	Depth
Location	Location	Permanent	Detail
Size	Spacing	Position	Dimension

Underpinning
Waterproofing
Boiler Plant
Step Footings to Low Level
Reinforced Slabs on Earth
Retaining Walls

WATERPROOFING AND DAMP-PROOFING

Areas
Baths, Toilets
Brushed
Cellars
Cement
Cement Mortar
Cork Insulation over Vaults
Courts
External, Walls
Flat Roofs
Foundations
Integral
Internal, Walls
Kitchen
Laundry
Membrane
Pits
Protection
Showers
Sidewalks
Tank Rooms
Tunnels
Vaults

FRAMING

Beam Brackets
Beams
Chases
Columns
Crane Supports
Ducts
Girders
Graphic Analysis of Trusses for Building Code
Grillages
Guide Supports
Hatches
Lintels
Machine Supports
Penthouse
Shafts
Skylight
Stair Landings
Struts
Tank Beams
Templates
Tie-rods
Trusses
Windbracing

MASONRY

Area Drains
Ash Drops
Ash Pit
Band Courses
Boiler Settings
Bond Stones
Book Vault Construction
Brackets
Buttresses
Cesspools
Chases
Chimneys
Chimney Caps
Cisterns
Colored Mortar Joints
Column Protection
Copings
Corbels
Corner Stone
Curbs
Driveways
Duct Enclosures
Efflorescence
Elevator Pits
Exhaust Shafts
Exterior Stucco
Fire Walls
Footing Courses
Footing Drains
Gradients
Grillage Enclosures
Ground Arches
Hollow Brick
Inserts
Insulation
Leader Drains
Lintels
Mach. Foundations
Manhole Trenches
Masonry Stairs
Meter Pit
Mullions
Panels
Parapet
Partitions
Penthouses
Piers
Pipe Shafts
Pit Drains
Quoins
Reglets
Sand Blasting
Sgraffito
Sidewalks
Sills
Skylight Curbs
Soil Drains
Sound-proofing
Steps
Sump Pits
Transoms
Tunnels
Vault Lights
Vaults
Wall Drains
Wall Finish
Wall Furring
Walls
Wall Sleeves
Waterproof Mortar
Watertable
Wire Shafts

Note—See also "Fireplaces," "Floors."

FIREPLACES

Arch Bars
Ash Drops
Dampers
Facings
Firebacks
Flue Extensions
Flues
Flue Closets
Gas Lighter
Hearths

Jacks
Linings
Mantels
Rain Check
Smoke Chamber
Spark Guard

MISCELLANEOUS IRON

Area Gratings
Bar Gratings
Bomb Screens
Carriage Hood Sockets
Chase Lintels
Checkered Steel Plates
C. I. Rad. Encls.
Coal Chute
Column Protection
Corner Stone Box
Counter Supports
Drying Racks
Fences
Fire Balconies
Fire Escapes
Flag Pole Supports
Folding Gates
Furring Lintels
Gates
Hatch Covers
Hatch Guards
Ladders
Manhole Covers and Frames
Metallic Non-slip Treads
Pipe Shaft Platforms
Protection Rails
Radiator Enclosures
Railings
Sheet Steel Doors
Slat Floors
Sump Covers and Frames
Sun Parlors
Terra Cotta Supports and Anchors
Tree Guards
Trench Covers and Frames
Vault Fronts
Vision Grating
Wheel Guards
W. I. Section Windows and Doors

Note—See also "Stairs," "Fireplaces," "Carpentry."

ORNAMENTAL IRON AND BRONZE

Balconies
Bronze Exterior
Counter Screens
Fences
Gates
Grilles
Iron Exterior
Lamp-posts
Lanterns
Marquise
Mullions
Numbers
Ornament
Railings
Register Fronts and Frames
Signs
Spandrels
Special Handrails
Special Stairs
Tablets
Terminals
Wickets

Note—See also "Stairs," "Trim."

FLOORS

Arches
Asphalt
Borders
Brick
Cement Floor
Cement Hardener
Composition
Cork
False Floors
Fill
Filling
Finished Floors
Haunches
Hearth Border
Hone Finish
Linoleum
Marble
Mastic
Mat Sinkage
Mosaic
Nailing Concrete
Non-slip
Parquet
Pipe Pockets
Polishing
Carpet Plugs
Carpet Strips
Ceramic
Cement Base
Pugging
Quarry
Rubber
Saddles
Sand Cushion
Sleepers
Smoothing Coat
Sound-proofing
Staining
Stone
Terrazzo
Tile
Trench Covers
Trenches
Underfloors
Varnishing
Waterproofing
Wood Carpet
Wood Strip
Waxing

STAIRS

Base
Brackets
Carriages
Dust Board
Easements
Exit Requirements
Face Strings
Fascias
Fireproofing
Furred Soffits
Handrails
Landings
Newels
Non-slip Treads
Partition Support
Platforms
Rails
Ramps
Risers
Treads
Wall Rails
Wall Strings
Window Guards

CARPENTRY

Acoustic Felt
Air Boxes
Barrel Skids
Bins
Caulking Windows
Chutes
Dumbwaiters
Exterior Wood Trim
Grounds
Gutter Linings
Hardware Setting
Slides
Truck Racks
Keyboards
Lockers
Pipe Chase Covers
Pocket Linings
Rough Bucks
Rough Hardware
Sash
Scuttles
Sheathing
Shelving
Sleepers
Underfloors
Weatherstrips
Window Frames

Note—See also "Floors," "Trim."

TRIM

DOORS:
Access
Closet
Dumbwaiter
Elevator
Exit
Fire
Flap
Folding
Folding Partitions
Hand-hole
Revolving
Rolling
Rolling Shutters
Secret
Shaft
Sliding
Smoke Check
Sound-proof
Swinging
Toilet Compartment

Architraves
Base
Beam Casing
Beam Ceiling
Bookcases
Borrowed Lights
Bulletin Board
Carving
Cedar Closets
Ceiling Lights
Chair Rails
Closet Fittings
Columns
Counters

Cupboards
Curtain Pockets
Decks
Directory
Door Frames
Drain Boards
Dressers
Frame Casings
Furniture
Handrails
Hat Racks
Inside Shutters
Jambs
Linen Room
Mail Racks
Mantels
Medicine Closets
Mirrors
Paneling
Panel Racks

Peg Board
Picture Molding
Pilasters
Plinths
Radiator Enclosures
Saddles
Screens
Show Windows
Telephone Booths
Transoms
Umbrella Racks
Urinal Partitions
Venetian Blind Pockets
W. C. Partitions
Wainscot
Wall Molds
Window Architraves
Wire Molding
Wood and Glass Partition
Woodboxes

Note—See also "Stairs," "Floors," "Carpentry."

ROOFING AND SHEET METAL

Box Gutters
Bulkheads
Crestings
Dormers
Drainage
Eaves
Ext. Sheet Metal
Finials
Flashing Adjoining Buildings
Flashing Flag Poles
Flashing Rail Uprights
Flashings
Gutter Screens
Hips

Hung Gutters
Leader Heads
Leaders
Louvers
Material
Ridges
Scuppers
Scuttles
Skylights
Skylight Screens
Snow Guards
Valleys
Ventilators
Wind Vane

GLAZING

Baffle Screens
Bookcases
Borrowed Lights
Cabinets
Ceiling Lights
Deal Plates
Desk Tops
Doors
Double Glazing
Dresser Fronts
Enclosures
Medicine Closets

Mirror
Partitions
Peepholes
Screens
Shelves
Shower Enclosures
Show Windows
Sidelights
Skylights
Toilet
Transoms
Windows

MARBLE

Safes
Showers
Splash Boards

Stools
Urinal Partitions
W. C. Partitions

Note—See applicable items under "Masonry," "Floors," "Fireplaces," "Stairs," "Trim."

MOSAIC, TERRAZZO

Borders
Floors
Inserts

Pattern
Wall Panels

STRUCTURAL GLASS

Architraves
Base
Border
Counter Tops
Refrigerator Lining
Saddles

Shelves
Table Tops
Urinal Partitions
Wall Panels
W. C. Partitions

TILE, CERAMIC

Base
Border
Built-in Accessories

Floors
Splash Boards
Wainscots

KALAMEIN, HOLLOW STEEL

See applicable items under "Trim" and "Rough Carpentry," particularly doors, windows, frames, partitions, show windows, fire doors. Exterior to be copper Kalamein.

HEATING

Air Compressor
Air Supply Ducts
Air Washers
Ash Removal
Baffle Plates
Blow-off Tank
Boiler
Boiler Flue
Boiler Pit
Boiler Room
Boiler Room Exhaust
Boiler Room Exit
Ceiling Insulation
Cleanout
Coal Chute
Discharge Caps
Economizers
Exhaust Fans
Expansion Loops
Filter Chamber
Fire Dampers
Fire Louvers
Fireproof Const.
Fresh Air Intake
Fuel Conveyor
Fuel Storage
Fume Closets
Hand-holes
Heating Branches

Heating Mains
Humidifiers
Hung Radiators
Intake Drain
Intake Insulation
Intake Screens
Louvers
Non-conducting
Pipe Chases
Pipe Pockets
Radiator Enclosures
Radiators
Register Faces
Registers
Return Pumps
Reversing Device
Rolling Shutters
Skylights
Smoke Breeching
Snow Melting
Steam Jets
Thermostat Motor
Thermostats
Trap Pockets
Valve Control
Ventilation Ducts
Ventilation Motor
Water Supply

REFRIGERATION

Air Cooling
Brine Cooler
Circulating Pumps
Condenser

Crusher
Cuber
Drainage
Drinking Water Cooler

- Exit
- Filter
- Fire Dept. Connection
- Gas Machines
- Ice Handling
- Insulation
- Machine
- Mains
- Pilot Lights
- Pipe Chases
- Power Supply
- Protection of Moving Parts
- Refrigerators
- Storage
- Valve Control
- Ventilating
- Water Supply

PLUMBING (Plumbing and Drainage Permits)

- Automatic Starter
- Back Water Valve
- Bathroom Fitting
- Boiler Blow-off
- Broiler
- Clothes Washer
- Curtain Rods
- Distribution
- Drinking Water Filter
- Drinking Water Fountains
- Drip Pan
- Dryer
- Ejector and Compressor
- Ejector Vent Line
- Emergency Lighting
- Filter
- Fire Hose and Racks
- Fire Lines
- Fire Pump
- Fixtures
- Floor Drains
- Fresh Air Intake
- Gas Heaters
- Gas Mains
- Gas Meter
- Glass Holders
- Gravity Soap Supply
- Grease Traps
- Hood
- Hot Water Heater
- Hot Water Tank
- House Pump
- House Tank
- House Trap
- Incinerator
- Kitchen Sink
- Laundry Stove
- Lavatories
- Leader Conns.
- Leader Drains
- Mangle
- Marquise Drains
- Medicine Cabinets
- Pantry Sinks
- Paper Holders
- Permits
- Pipe Shaft
- Power Supply
- Pressure Valves
- Range
- Reducing Valves
- Refrigerator Drains
- Refrigerator Sinks
- Sadirons
- Sewage Disposal
- Sewer
- Shelves
- Shower Controls
- Shower Curtains
- Showers
- Siamese
- Sill Cocks
- Siphons
- Slop Sinks
- Smoke Pipe
- Soil Line
- Sprinklers, Tank
- Sterilizer
- Street Hydrants
- Suction Tank
- Sump Cover
- Sump Pump
- Tank Ladder
- Tank Signal
- Trap Pit Cover
- Towel Bars
- Trenches
- Tub Grips
- Tubs
- Urinals
- Valve Control
- Vent
- Vent Line
- Warming Closet
- Wash Trays
- Waste Line
- Water Closets
- Water Motors
- Water Piping
- Water Softener
- Water Supply Meter

PNEUMATIC

- Carriers
- Compressor
- Piping
- Receiving Stations
- Sending Stations
- Storage Tank

VACUUM CLEANING

- Control
- Disposal
- Exhaust
- Hose
- Machine
- Mains
- Outlets
- Power Supply
- Tool Closets
- Tools

ELECTRICAL

- Annunciators
- Bath Cabinets
- Book Vault Protection
- Burglar Alarm
- Cable Support Boxes
- Call Bells
- Conduits
- Counter Screen Reflectors
- Current Supply
- Dictagraph
- Direct Lighting
- Director Shelf
- Electric Clocks
- Electric Cooking
- Electric Heating
- Engine
- Entrance Bells
- Exchange
- Ext. Lanterns
- Fan Outlets
- Fire Alarms
- Fixture Supports
- Floor Lighting
- Generators
- Indirect Lighting
- Junction Boxes
- Lamp Posts
- Lighting Outlets
- Lightning Rods
- Mangle
- Meters
- Motors
- Panel Box Fronts
- Panels
- Plate Warmers
- Power Outlets
- Receptacles
- Sadirons
- Service Switch
- Show Window Lighting
- Signs
- Sterilizer
- Storage Batteries
- Switchboard
- Switch Control
- Tank Signals
- Telautographs
- Telegraph
- Telephone Booths
- Telephone Chases
- Telephone Panels
- Telephones
- Ticker
- Time Stamps
- Transformer Room
- Wall Sleeves
- Washer
- Watchmen's Signals
- Wire Chases
- Wireless
- Wire Molds
- Wiring

ELEVATOR INFORMATION

- Annunciator Finish
- Automatic Reset
- Base
- Bumpers
- Bumper Supports
- Cab Gates
- Cab Roof Platform
- Cab Size
- Cab Step Lighting
- Call-back
- Combination Gate and Door Operator
- Controller Location
- Counterweight Screens
- Crane for Handling Parts of Machines
- Current Supply
- Design
- Dials
- Door Closing Device and Support
- Emergency Exit
- Enclosure Doors
- Fan Outlet
- Finish of Shaft, Walls, Side and Rear
- Fire Dept. Service
- Flash Light Annunciator
- Floor
- Floor Gratings on Arch
- Floor Landing Emergency Lock
- Floor Numbers
- Floor Numbers Elev. Hall Walls
- Front at Floor Thicknesses
- Gate Contact
- Gate Hangers
- Gate Operator
- Glazing
- Governor Location

Guide Lubricators
Guide Supports
Handrail
Hangers—Dust Cover
Hatch in Floor of Mach. Room
Head Room above Top Landing
Horsepower
Inspection Certificate Frame
Interlock Operator
Interlocks
Lanterns
Lighting Fixtures
Lock Drop Annunciators
Machine Room
Machine Room Exhaust
Machine Room Soundproofing
Machine Room Support
Max. Cap., lbs.
Mirrors
Night Service
Non-slip Paving at Openings
Normal Cap., lbs.
Operator's Flash Lamp
Panel Location
Pit Depth Below Lowest Landing
Pit Drainage
Power Supply
Push Button Plate Design
Roping Room
Saddles
Safe Lift Cap., at Low Speed
Shaft and Pit Lighting
Shaft Access Doors
Sheave Beams
Sheave Grating or Arch
Signal Machine Location
Signals
Signal Transfer
Skylight Over Shaft
Slow-down Indication
Speed per Min.—Max. Load
Speed per Min.—Normal Load
Starter's Plate Design
Starter's Signal
Sunday Service
Telephone In Cab
Total Rise
Total Stops
Type of Machine
Ventilation Registers

DRAFTING ROOM

NOTES

Both large and small Consultation Rooms, opening off of Main Lobby should be reserved for appointments and emergency needs of the Administrative Staff. On such occasions when the Contractor's Room is occupied permission should be obtained from the front office before occupying either of the rooms.

Whenever on a building of public assembly we equip all exterior doors with "panic bolts" let us equip at least one door with the proper hardware so that it may be opened from the exterior. On a building as large as the new Constitution Hall we should have provided such a door-operating device on each one of the three streets.

Provide on every job one or more steam hose connections for the purpose of making available to an Owner an efficient and rapid method of snow and ice removal. Such a connection to be one inch. Should be located as near window as run of steam main will permit.

GENERAL CONTRACTORS

We have recently had a demonstration of the fact that it is very poor office policy for the Architect to deal directly with the Subcontractor. Frequently, in order to expedite work, it seems unavoidable that direct contact be made with a representative of the Subcontractor in order to settle points of detail, but such action should always be safeguarded by letters to the General Contractor and if possible a representative of the General Contractor should be present in all cases. All correspondence should be directed to the General Contractor. When the element of time limit in an emergency requires immediate information in the Subcontractor's hands the correspondence should still be addressed to the General Contractor and a copy forwarded to the Subcontractor simultaneously.

QUOTATION OF ESTIMATES

Attention of Job Captains is called to the requirement that the transmission of estimates to clients, either preliminary, general or for small items of the work, should be handled through the front office.

OFFICE HOURS

Periodically the observance of the office hours becomes lax and when once started seems to have an accumulative effect on the entire force with a few exceptions. It is desired that each member of the organization be his own mentor in this regard. It has never been the principle of the office to produce a factory-like regimentation in regard to the element of time. However, there is something very akin to taking money out of the till when freedom is carried to excess. The willingness to make up time that is lost due to tardiness does not compensate.

SPECIFICATION DEPARTMENT

SPECIFICATIONS

In the future we desire to use T.M.C. lock strip without alternate. Likewise, where any other material is proven to have given exceptional service we may specify it by trade name without an alternate.

JOB CAPTAINS

CORRESPONDENCE

The original copy of incoming letters is not to be held in the drafting room more than twenty-four hours. Notes should be made covering any points required and these notes should be kept in the job record as a permanent part of the information. In case a letter is too long to transcribe by longhand it may be copied in the outer office.

FILING

One man from the filing department has been assigned to each floor and his services should be used to economize the amount of time spent in handling drawings. In securing drawings from the files there are no rules against a man making a short cut by getting the drawing for himself, but if the drawing is found to be missing from its proper folder then the file clerk should be called to locate it. Likewise the file clerk has instructions to return to the cabinets at suitable intervals all drawings not in use.

SAMPLES

When requesting samples of terrazzo, limestone, sandstone, bluestone and soapstone they should be 6"x10½" from ¾" to 1" in thickness. Granite samples to be 12"x12" 2" thick with tooled edges.

PHOTOSTATS

1. The cost of a photostat is based, in most cases, not on the size of the enlargement, but on the size of the paper on which it is printed.

2. If a photostat comes back with an attractive white border, and this border is not required, we may be paying just as much for the border as for the enlargement itself.

In order to avoid this waste, please state if a border is wanted, and for further economy try to state exactly on what size paper the photostat should be printed.

The stock sizes of the print paper, and the respective costs are:

8½ x 11	$ .25
11 x 14	.35
14 x 18	.50
18 x 22	1.00

In making a photostat it is first necessary to make a negative, so to the cost of the positive must be added the cost of one negative. The negative, however, is generally printed on paper of smaller size than the positive.

Another process of enlarging is the "Solar Print."

While the chief advantage of the "Solar Print" is the large size of paper on which it can be made, it will be seen that the 20" x 24" size is more than 40% cheaper than an 18" x 22" photostat.

The sizes in inches and prices of "Solar Prints" are:

16 x 20	$ .35
20 x 24	.60
25 x 30	1.00
30 x 40	1.50
40 x 50	2.25
40 x 60	3.25
40 x 70	3.75
40 x 80	4.25

The "Solar Print" negative is made on a 5" x 7" glass, and will be preserved for an additional twenty-five cents.

MONUMENTAL STAIRWAYS

This is one item on all jobs that invariably entails a claim for extra on the part of the contractor. When final details were prepared on the Junior League, Spence School, D.A.R., and Congregational Church our final designs were the basis of such a claim. It is highly desirable to study all monumental stairways and determine all actual points, both as to construction and esthetic design, before the issuance of contract drawings. A specification writer cannot actually picture the development that will take place sixty days after the contract is awarded. The following points need to be definitely determined:

Pattern of wrought iron or bronze work and method of anchoring to stair construction. Thickness of stone or precast terrazzo treads should not be less than 1¾", and frequently a 2" thickness is required. Thickness of wall strings and face strings must be explicitly noted and the number of members, if more than one, and all molded sections indicated. Any curve work at the stair or landing levels should be indicated and definitely noted as to whether this must be a part of the landing slab or detailed as a separate piece. If lack of time or other reasons prevent the proper study of the details, a Cash Allowance sufficient to cover the ornamental portions of the stair, should be used. Cast railings should not be used on light wrought iron as the problem of anchoring becomes very difficult. On exterior stairs or approaches, cover all details regarding the letting of steps into stone cheeks and the waterproofing by membrane method where the steps are carried over excavated parts of the building.

LAUNDRY DESIGN

1. Amount of floor space ultimately required for laundry plant.
2. Comparative rental value, and desirability for other functions, of floor space in different parts of building.
3. Cost and convenience of conveying to the proposed location adequate supplies for both hot and cold water.
4. Cost and difficulty of installing steam piping to and from boiler.
5. Problem of providing suitable drainage system.
6. Ease of delivery of soiled linen from all collection points to the laundry, and of finished work to storage rooms.
7. Possibility of damage to expensively furnished space from leaks in steam or water piping and in drains.
8. Weight and live load figures of equipment to be installed, especially if upper floor locations are contemplated.
9. Cost and coordination with other hotel departments of arranging for necessary and ample ventilation.
10. Location of means for properly disposing of lint exhaust, absolutely necessary to avoid nuisance and fire risk.
11. Clearances and means for moving large units of machinery without excessive cost or risk of damage.
12. Probability and prevention of drift of dust and dirt into plant.
13. Convenient service entrances for employees, and availability of adjacent space for employees' rest facilities.
14. Choice of materials handling methods and their influence on floor space assignment.

15. Effect on laundry location of any plans for future growth of hotel.

(a) For hospitals, while the average area of 10 square feet per bed should provide adequately for immediate needs, a more judicious estimate would allow 12 square feet per bed. This latter figure gives ample opportunity for expansion or the installation of additional equipment as demand dictates.

(b) Hotel laundry plant floor space can be economically estimated on the basis of 15 square feet per bed. This method of calculating gives necessary consideration to the requirements of dining halls and banquet rooms. If the hotel is to operate a guest laundry service, a commensurate increase in plant area will be needed.

TIME RECORDS

Time records are to be kept daily and according to the following abbreviations:

P.D.	(Pencil Drawing)
I. Tr.	(Ink Tracing)
Supp. No.	(Supplement No.)
Chk. Shop Dwgs.	(Check Shop Drawings)
Sch.	(Schedules)
Per. R.	(Perspective Rendering)
Gen.	(General) Job Captains Only
Conf. Contr.	(Conference Contractor)
Conf. Owner	(Conference Owner)
Conf. B. M.	(Conference Building Material)

All sketches—whether plans, elevations or perspectives—to be submitted to client, shall be given sketch numbers.

Rough sketches to be later assembled for finished drawings shall be noted under the drawing number.

All sketch and drawing numbers must be secured upon the commencement of the work. If this is impractical under the job conditions, assign a temporary indication A, B, C, etc., for the purpose of the time record, later transferring to the permanent drawing number. Advise the chief draftsman of any proposed absences from the office, and where absences are unexpected, a message should be telephoned to the office explaining same.

OUTSIDE WORK

(In the case of service lines these are usually brought to within 10′-0″ of building by Contractor for "Outside Work." At this point, Contractor for the building makes connection for and carries service lines into the building).

SURVEYS	To indicate Roads, Contours and Trees; Gas, Electric, Water and Sewer lines.
SOIL:	Earth (type). Rock (type). Sub-surface Water (springs or tide water). Quicksand.
GAS:	Public or Private Co. Service. Natural or Artificial.
ELECTRIC:	Public or Private Co. Service or Owner's Plant. Alternating or Direct Current—voltage. Underground or Overhead. Transformer Room.
TELEPHONES:	Public or Private Co. Service Underground. Intercommunicating to various units and in each unit.
SEWAGE:	Public or Private Sewer—size, location, level. Sewage Disposal Plant. Storm Water Drains.
WATER:	Public or Private Co.—pressure. Private Wells—flowing or pumps. Private Tanks—elevated or underground. Filters and Softeners. Fire Hydrants and Lines. Lawn Sprinklers. Fountains or Swimming Pools. Sprinkler Systems for Fire Protection.
ROADS:	Telford or Concrete Base Catch Basin. Concrete, Gravel, Bluestone or Asphalt Topping. Bridle Paths. Fire Stop Lanes through Wooded Areas. Docks and Landings. Tennis Courts. Road Lights, Fire Court, Service Yard, Drying yard.
WALLS:	Retaining Walls or Terraces. Entrance Gates — bell push at gates; where to ring. Fences.
OUTBUILDINGS:	Gate Lodge, Stable, Garage, Greenhouses; Power or Pump. Paddocks, Kennels or Gamekeeper; Bath Houses; Indoor Tennis Courts or Swimming Pools. Farm Building—docks or yacht landings. Central Heating Plant for all Buildings or Separate Plant in each Unit.
GARDENS:	Vegetable or Flower Gardens; Rock or Water Gardens; Terraces, Planting, Sod or Grass Seeds.
SCREENS:	Insect Screens of Metal or Wood—stationary,* sliding,* hinged or roll-up.
BLINDS:	Wood Shutters; Venetian Blinds—inside or outside.

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* Materials recommended.

AWNINGS:
WEATHERSTRIPS:
- Metal.*

STORM SASH:
HARDWARE:
- Master Key System.

ALARM SYSTEMS:
- Burglar or Fire; Watchman Clock System.

INSIDE WORK

HEATING:
- Outside Steam Lines brought to building.
- Coal: If gas or oil, to have automatic control (supply or storage tanks).
- Steam, Hot Water, Vapor Vacuum or Hot Air.
- Direct or Indirect System.
- Radiators Exposed or Concealed.
- Thermostatic Heat Controls,* Humidifier, Insulation of Walls and Roofs.

PLUMBING:
- Galv. Iron or Brass Pipe* for H & C water lines.
- Water Filters and Softeners.
- Hot Water Heaters and Tanks (coal, oil or gas fired).
- Ice Making or Refrigerating Machines.
- Refrigerators—iced or refrig. system.
- Ice Water Supply.
- Fire Lines and Hose Racks.
- Sprinkler Systems.
- Garden Hose Connections.
- Water and Gas Meters.
- Flush Valves or Tanks on W.C.
- Hot and Cold Water in Masters' and Servants' Wings, piped and controlled separately.
- Grease Traps.
- Showers, Laundry.

INCINERATOR:
- Central Incinerator on property or separate installation at each unit.
- Coal, Gas or Oil, fired.

MACHINERY:
- Elevators, Dumbwaiters, Trunk Lifts.
- Electric or Hand Power.
- Refrigerating and Ice Cream Machines (Electric).
- Ventilating Systems (Electric).

ELECTRIC:
- Light and Power Lines (Vacuum Cleaners).
- Dumbwaiters and Lifts (portable or central).
- Laundry Machinery, Kitchen and Pantry equipment.
- Refrigerating Machines.
- Ventilating Fan Motors.
- Remote Control or Emergency.
- Electric Clocks.

LIGHTING FIXTURES:
- Base Plugs, Wall and Ceiling Outlets.
- Night Lights.
- Plug Outlets for Extensive Lighting of Terrace or Grounds (garden parties, etc.).
- Closet Lights. General Control of Base Plugs, one Switch.

CALL BELLS AND ANNUNCIATORS:
- Door Bells.
- Call Bell System for Maid, Valet, Butler, Housekeeper, Governess, Laundress, Visiting Servants.

ALARMS:
- Burglar, Fire, or Watchman Clock System.

SOUND-PROOFING:
- Acoustic treatment of Ceilings.
- Acoustic treatment of Pantry.
- Soundproofing of Walls, Floor and Ceiling of Bathrooms and Maids' Closets in Master Portion.
- Communicating Room and Doors.

STORAGE ROOMS:
- Coal, Wood, Furniture and Mineral Water.
- Trunk Rooms with racks.
- Cedar Rooms for rugs and furs.

VAULTS:
- Silver and jewel.

RECEIVING AND UNPACKING ROOM:

CLOTHES CHUTE:
- Metal or glass lined and ventilated.

RANGES:
- Coal, Gas or Electric.

PLATE-WARMERS:
- Gas or Electric.

TOWEL DRYER:
- Gas or Electric.

LAUNDRY DRYER, BOILER, AND STARCH COOKERS:
- Coal, Gas or Electric.

LAUNDRY MACHINERY:
- Electric.

BATHROOM ACCESSORIES:
- Medicine Cabinets (wood or metal).
- Towel and Grab Bars. Soap Dishes, Paper Holders (china or metal).
- Built in or applied.

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* Materials recommended.

ROOMS	FLOORS	WALLS	EQUIPMENT
Laundry (separate laundry for servants)	Cement Tile* (vitreous) Rubber Linoleum	Plaster (enamel or paint) Tile (glazed)* Tile (mat-glazed) Vitrolite*	Tubs (porcelain or vitreous ware). Dryers (gas, electric or coal with vent flue). Ironing Machines (electric). Starch Cooker (coal or elec.). Boiler (coal or elec.). Ironing Tables (elec. outlets). Washing Machines (elec.). Clothes Chute. Store Closets.
Kitchen (Scullery, Veg. Storage, General Storage, Pastry Room)	Wood Cement Vitreous Tile Rubber Tile* Linoleum*	Plaster Enamel Oil Paint Glazed Tile* Vitrolite*	Ranges (coal, gas or elec.). Plate Warmer (gas or elec.). Sinks (porcelain or vitreous ware). Dishwasher Refrigerators (meat and fish). Cook's Machine (elec.). Dressers (wood or enamel), (iron), rubber or linoleum covered counters. Ventilating (vents flues or fan). Incinerator.
Preparation Room	Wood Cement Vitreous Tile Rubber Tile* Linoleum*	Plaster Enamel Oil Paint Glazed Tile* Vitrolite*	Galvanized, Enamelled Iron or Vitreous Sink. Ice Cream Machine—storage. Refrigeration.
Pantry	Wood Cement Vitreous Tile Rubber Tile* Linoleum*	Plaster Enamel Oil Paint Glazed Tile* Vitrolite*	Plate Warmer. Towel Dryer (elec. or gas).
Store Room			Silver Vault. Silver Cleaning Room (buffing machine).
China Room			Sink (metal with wood or linoleum-covered drainboards, copper or white metal). Acoustic Treatment.
Servants' Corridors, etc.	Wood* Cement Rubber Linoleum*	Plaster (painted) Tile (glazed vitrolite)	
Servants' Bedrooms	Wood* Cement Linoleum*	Plaster (painted)	Separate Wash Basin in each room. Metal Cabinets or Closets.
Servants' Baths	Tile (vitreous*) Cement	Tile (glazed*) Vitrolite Hard Plaster	Tub, W. C. and Showers for Men Servants.
Boot Rooms	Cement or Tile	Cement or Tile	Sink and Cupboards.
Servants' Trunk Rooms	Cement*	Cement*	Metal or Wood Racks*.
Servants' Sitting Room	Wood* Linoleum* Rubber	Plaster Oil Paint	Chair Rail.
Servants' Dining Room	Wood* Linoleum* Rubber	Plaster Oil Paint	Sink and China Closets. Chair Rail.
Fireplace Wood Storage	Cement*	Cement*	Metal Racks*.

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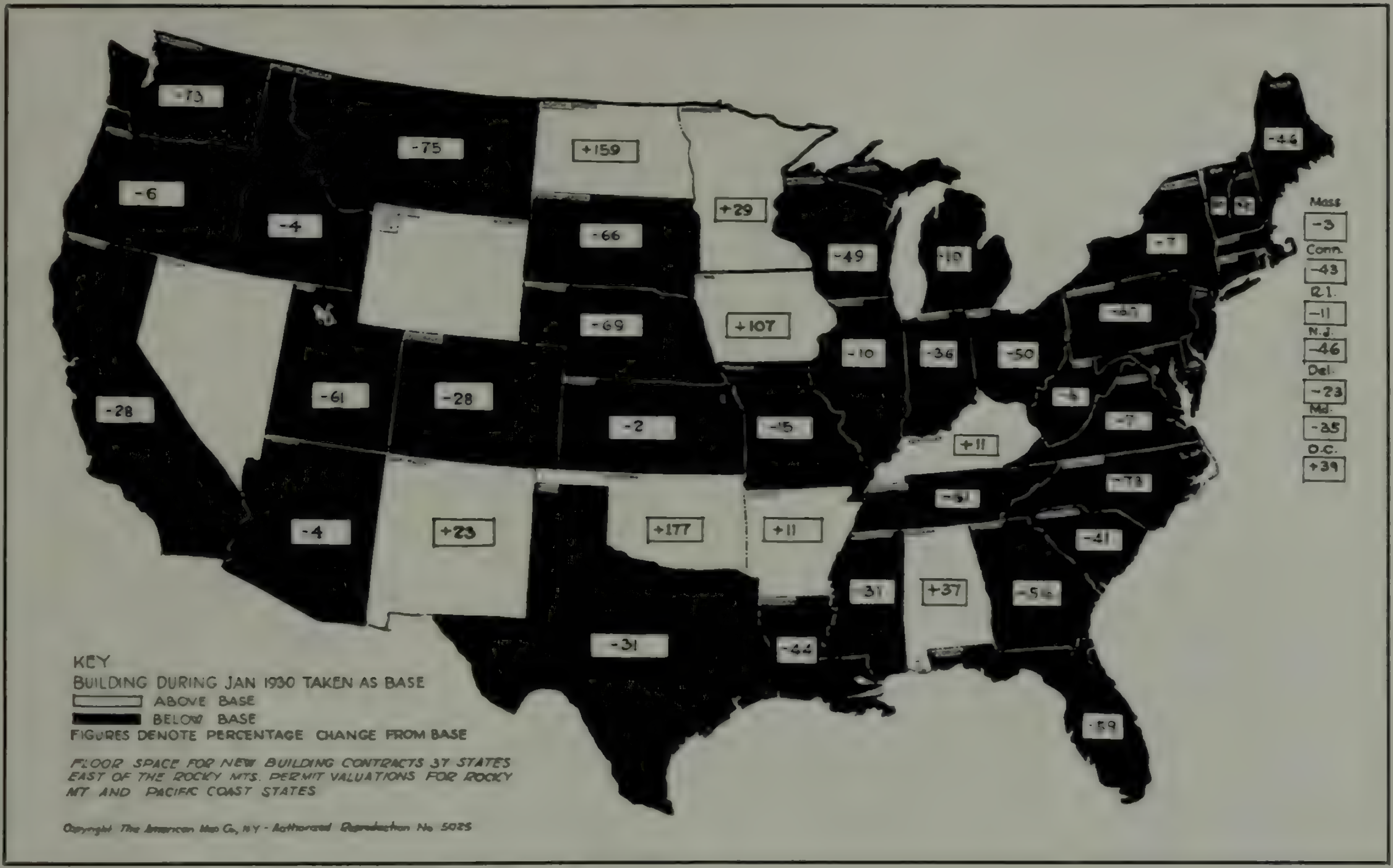
* Materials recommended.

ROOMS	FLOORS	WALLS	EQUIPMENT
Flower Room	Tile (vitreous) Rubber Linoleum	Plaster Enamel Paint Tile Vitrolite	Sink Dressers
Maids' Workroom	Wood Linoleum Rubber	Plaster Oil Paint	Sink—cupboards.
Valet's Workroom	Wood Linoleum Rubber	Plaster Oil Paint	Sink—cupboards. Metal Hanging Rods
Linen Room	Wood Linoleum Rubber	Plaster Oil Paint Enamel	Cupboards (wood or glass shelves). Outlet for Elec. Irons.
Visiting Servants' Rooms	Same as servants' bedrooms.		
Governess'	Same as servants' bedrooms.		
Children's Rooms	Wood Floors	Plaster Oil Paint	Fireplaces. Call Bell Buttons.
Children's Baths	Same as master's baths.		
Master's Baths	Vitreous Tile Rubber Cork Linoleum Wood	Enamel Paint Mat-Glazed Tile Glazed Tile Vitrolite Marble	Fixtures—enameled iron or porcelain. Marble lavatory slabs. Showers—glass enclosure. Sitz Bath. Electric Cabinet. Accessories—china or metal, built in or applied. Doors—full length mirrors. Electric Power Outlets. Electric Call Bell Buttons. Flush Valve Toilets or Tank.
Master's Bedrooms, Master's Sitting Room on Bedroom Floor, Private Dressing Rooms, Boudoirs, Sleeping Porches, Guest Bedrooms, Separate Bachelor Rooms			Venetian Blinds Intercommunicating Doors (sound-proof). Call Bell Buttons. Alarm Bell Buttons. Telephones. Lighting Fixtures, Plugs, Bracket and Ceiling. Closet Lights.
Gun Room, Men's Reception Room and Lockers, Ladies' Reception Room, Coat Rooms, Breakfast Room, Fireplaces, Fireplace Facings, Fireplace Hearths			Dining Room Library. Living Room. Card Room.


-73
-75
+159
-44
-6
+29
Mass
-3
-4
-66
-49
-10
-7
Conn.
-43
R.I.
-11
-69
+107
-10
-36
-50
N.J.
-46
Del.
-23
-28
-61
-28
-2
-15
+11
-7
Md.
-35
D.C.
+39
-78
-61
-4
+23
+177
+11
-41
-31
+37
-56
-31
-44
-59
KEY
BUILDING DURING JAN 1930 TAKEN AS BASE
ABOVE BASE
BELOW BASE
FIGURES DENOTE PERCENTAGE CHANGE FROM BASE
FLOOR SPACE FOR NEW BUILDING CONTRACTS 37 STATES EAST OF THE ROCKY MTS. PERMIT VALUATIONS FOR ROCKY MT AND PACIFIC COAST STATES
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The January building map showed eight states east of the Rockies where new contracts were in larger volume than in January 1930; at the same time three additional western states, based upon incomplete permit data, showed higher dollar totals than were recorded a year ago.

BUILDING TRENDS AND OUTLOOK

PROSPECTS FOR APARTMENT HOUSE BUILDING

Apartment house construction, whether it be for the middle classes or for the wealthy, has been activated in the last analysis by economic considerations. Urban growth has brought with it a scarcity of desirable land. This has reflected itself in ever-rising land values. Rising land values have made larger gross rentals necessary if a relatively constant yield upon original and accrued investment in realty were to be maintained. Business has stolen a march on residential areas, and in this development the fashionable residential districts, where single-family dwellings were the order, have been crowded out. Little wonder that vertical growth, made possible by improved technical design, should have taken seed under such circumstances.

Apartment house development has not been confined to the city. Many of our smaller towns and suburban areas have seen rapid growth in this dwelling type. The apartment house has taken root in these areas despite the fact that there is not the same sort of land scarcity, and that land values there are usually much lower than in our large cities. The question then appears as more deep-seated than that of landlord economics. It is fully as much a question of tenant-economics. Freedom from the ordinary cares of housekeeping is the most important persuasion to the prospective tenant. There can be no denying that for the renter the apartment house offers economies that have not yet been completely translated into the small dwelling. These economies have afforded the principal appeal to tenants.

From the point of view of contract values new apartment house building reached its largest expansion in recent years early in the summer of 1926. This expansion was naturally spurred by the Florida boom, which culminated at that time. From mid-year 1926 to the end of 1927, a period of about one and a half years, apartment house construction, though hesitating, was distinctly on the downgrade. This trend was temporarily arrested by the upturn in 1928 that lasted for eight months but which failed to attain the previous high level. Since August of that year the declining trend was resumed and fell to a level in January, 1931, lower than at any time since the beginning of comparable data in 1925.

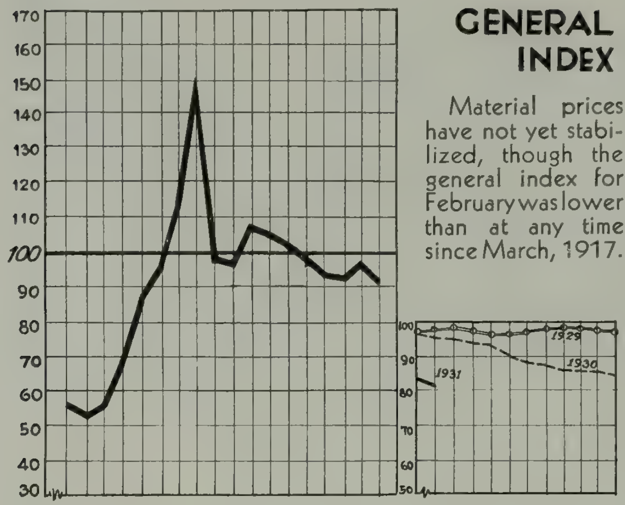
(Continued on page 90, advertising section)

WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average = 100

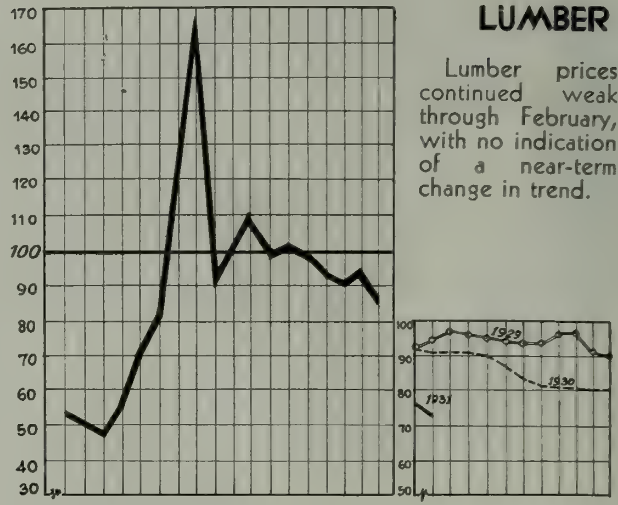
GENERAL INDEX

Material prices have not yet stabilized, though the general index for February was lower than at any time since March, 1917.



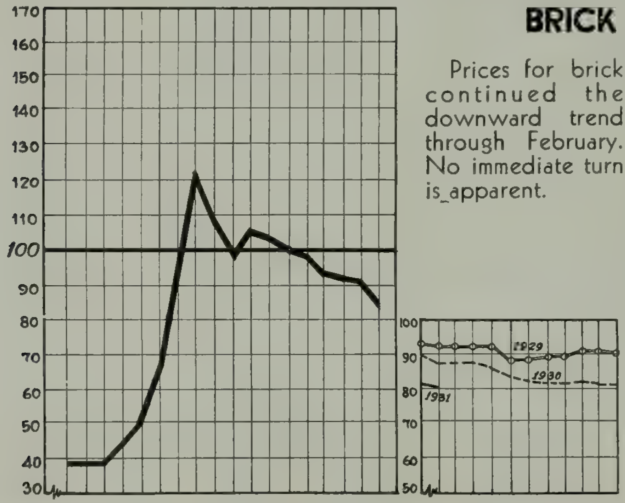
LUMBER

Lumber prices continued weak through February, with no indication of a near-term change in trend.



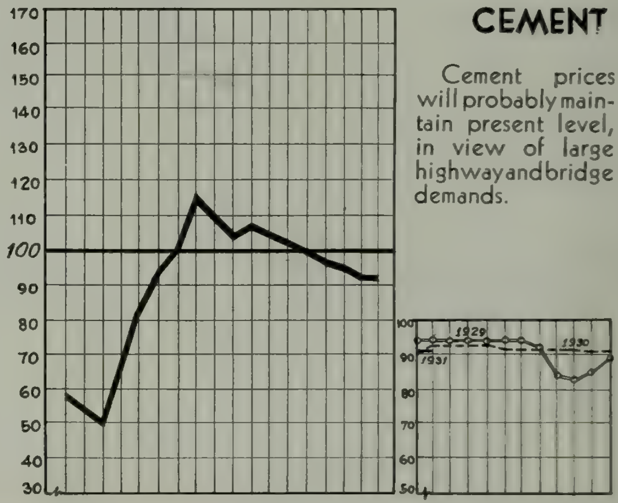
BRICK

Prices for brick continued the downward trend through February. No immediate turn is apparent.



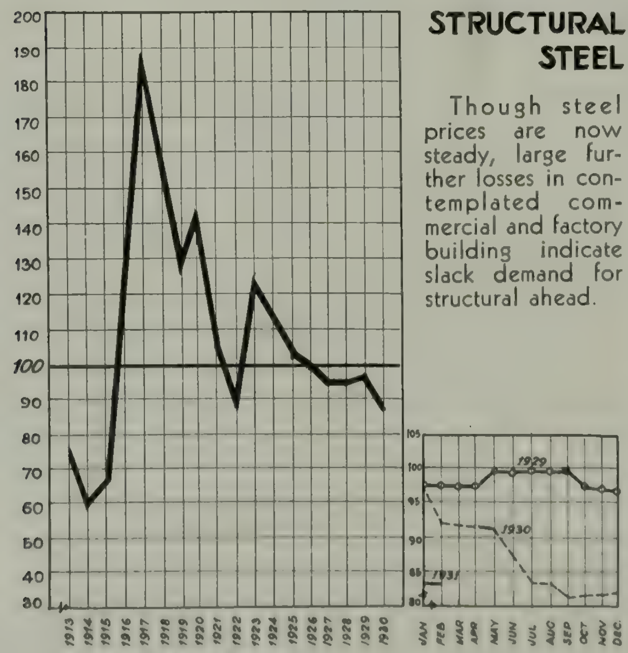
CEMENT

Cement prices will probably maintain present level, in view of large highway and bridge demands.



STRUCTURAL STEEL

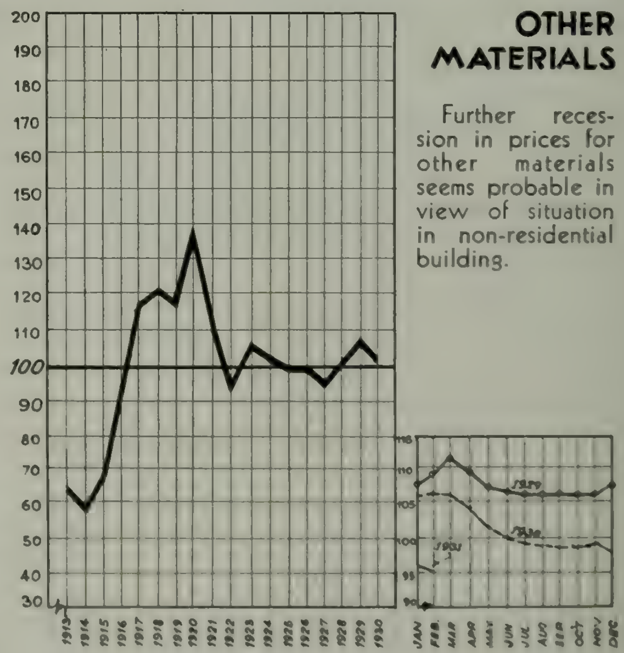
Though steel prices are now steady, large further losses in contemplated commercial and factory building indicate slack demand for structural ahead.



data from the U.S. Dept of Labor.

OTHER MATERIALS

Further recession in prices for other materials seems probable in view of situation in non-residential building.



Interiors of the
CINCINNATI ENQUIRER BUILDING
are painted for lasting beauty and cleanliness

A VERITABLE hive of industry day and night...reporters, clerks, stenographers, salesmen, buyers, countless others passing constantly in and out of its offices...brushing against walls, inevitably leaving smudges—finger prints. And the dust of a busy city always seeping through windows—through doors...settling on every exposed surface...

How can the walls and ceilings of such a building be kept cheerfully light...clean...handsome without the constant annoyance and expense of frequent repainting?

The management of the Cincinnati Enquirer Building has found the answer—as have managers of hundreds of other modern buildings—in the use of Barreled Sunlight.

Dust or smudges cannot permanently soil a surface painted with Barreled Sunlight. A moist cloth wipes it clean—quickly, easily. Upkeep is economical...in time and money.

Remarkably durable, Barreled Sunlight retains its handsome cleanliness after repeated washings . . . through long, arduous service.

Whether in long-lasting white, or soft, pleasing tints, Barreled Sunlight is conspicuously good looking, with a lustre of rich depth. An all-oil product, it is readily tinted any desired shade with ordinary colors in oil.

Our complete catalogue is in Sweets, but for your own files we would like to send you our booklet, "For Interiors of Lasting Beauty and Cleanliness."

Write U. S. Gutta Percha Paint Co., 22-C Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

THE CINCINNATI ENQUIRER BUILDING, Cincinnati's second largest office building. Here 200 gallons of Barreled Sunlight were used to insure interiors of lasting cleanliness and beauty. (Architects: Lockwood Greene Engineers, Inc.)

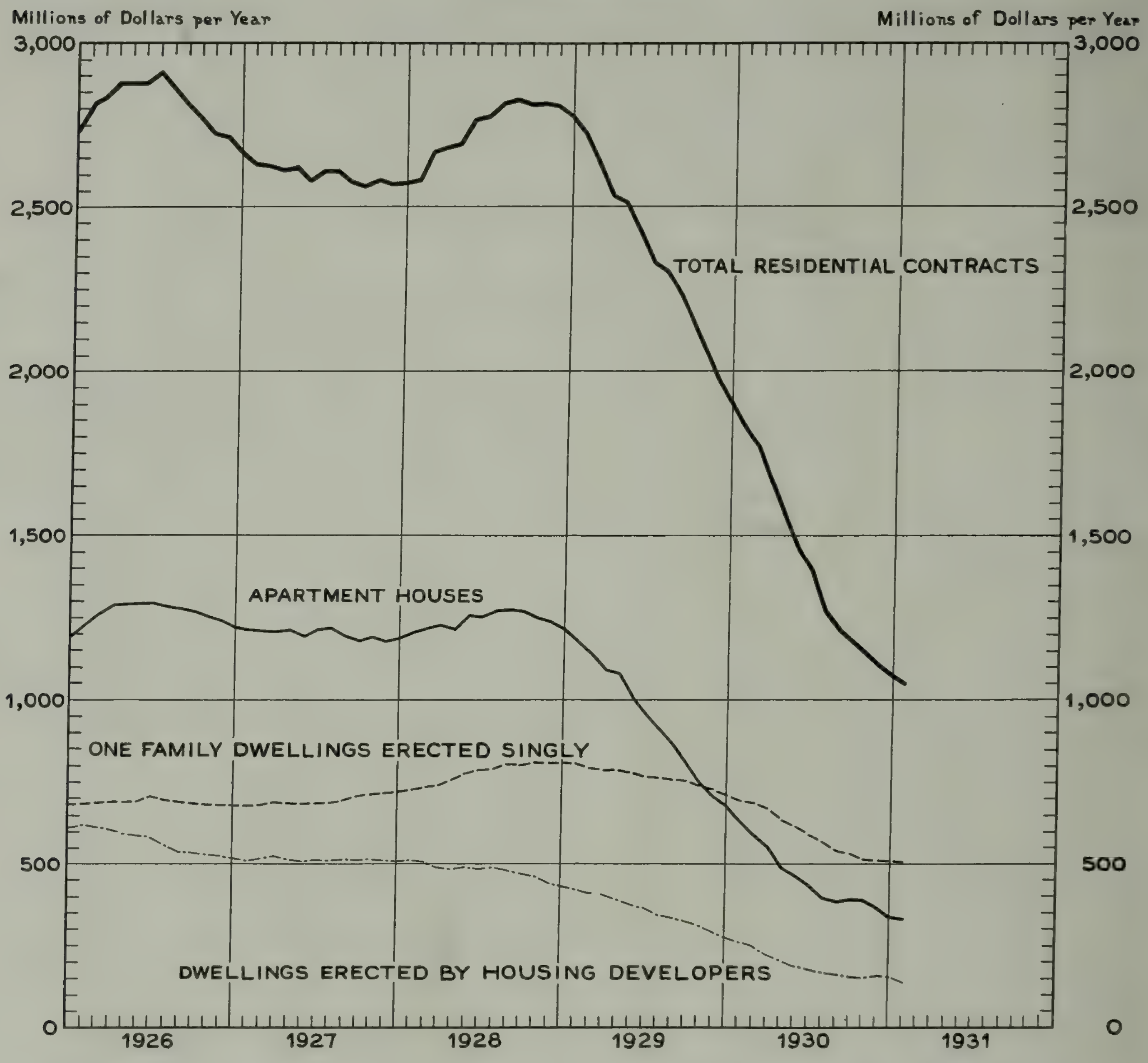
BARRELED SUNLIGHT is now available in two forms, Interior and Outside. Write for complete information on Outside Barreled Sunlight—its more pronounced whiteness, richer lustre and marked durability.

Barreled Sunlight

Reg. U. S. Pat. Off.

TREND OF RESIDENTIAL BUILDING IN 37 EASTERN STATES

(By principal types)



The trend in apartment house construction at this phase of the residential building cycle is probably of large barometric value, since new apartment activity, in recent years, has preceded major movements in the residential field.

Continued from page 273, editorial secton)

Preliminary figures for February indicate a turn in the trend, the first since August, 1928, at which time it was downward. Though this rise may turn out to be only a false start, the retrenchment has been so deep and so extended as to give reason for the opinion that revival in this type of residential building is definitely at hand.

The trend in apartment house construction at this phase of the residential building cycle is probably of large barometric significance, since it has been new apartment activity that, in recent years, has preceded major movements in the residential field. As a matter of fact new apartment house construction during the period prior to the stock market collapse in 1929 was more important, from the standpoint of contract valuations, than single-family dwellings.

Single-family dwellings erected principally for owner occupancy showed a downward trend in the latter half of 1926, but resumed early in 1927 the rise which, except for minor interruptions, continued until January, 1929. At that time it was on a higher level than ever before, quite unlike the trend in apartment house construction which some few months earlier failed to exceed its previous top recorded in 1926.

The apartment house is essentially an investment property. Though often erected by speculators such

(Continued on page 92, advertising section)

Anders…
SASH PULLEYS

Andersen
MASTER
Frames

Andersen
MASTER
WEATHERSTRIP

YOU will be interested in this new invention by Andersen engineers, a metal weatherstrip which fits all Andersen double-hung window frames; reduces air leakage 86 per cent; eliminates all rattles, and sells to builders for considerably less than one dollar a set.

No special stock of sash or frames is needed . . . This weatherstrip is installed quickly and easily, without routing, rabbeting or nailing.

I regard Andersen Master Weatherstrips as a real contribution to good construction.

Fred C Andersen

President, Andersen Frame Corporation

* Patents Applied For

ANDERSEN FRAME CORPORATION, Bayport, Minnesota AR

I am interested in the new Andersen Master Weatherstrip and would like to have ☐ detailed information, ☐ a demonstration and sample. I understand there is no obligation.

PLEASE CHECK: ☐ Architect, ☐ Builder-Contractor, ☐ Jobber-Dealer, ☐ Student

Name______________________________

Address______________________________

(Continued from page 90, advertising section)

buildings represent large outlay of capital on which prospects for profit must exist. Investors and speculators are by force of circumstances quick to adjust their programs to fundamental conditions. For this reason any major change in the trend of apartment house construction foreshadows a similar change in the trend of residential building in general; such was the case in 1928 and such will likely be the case when the revival in apartment house construction which is now peeping through more definitely asserts itself.

In the case of single-family dwellings erected by housing development companies, the trend in contract values has been almost continuously downward since 1925. Thus this dwelling type seems to have lost most heavily to the apartment house, which has invaded the same outer fringes of our cities and towns that have provided the setting for housing developments.

The immediate future will see growing competition in dwelling types as between apartments and dwellings. To the extent that architects, mortgage bankers and real estate interests sense the trend in the light of existing economic and social tendencies, the next cycle of residential building will be sounder than the one that preceded it. We have passed through a severe business depression which has affected a large section of our home-owner wage earners. The American family is showing a tendency to decline in size; immigration no longer is the important influence on population growth that it was a few years ago. These and many other economic and social considerations will determine ultimately the types of new residential buildings, though it will remain for further improvement in fundamental business conditions to point the way for recovery in the residential field as a whole.

L. SETH SCHNITMAN

IN APPRECIATION

LEROY S. BUFFINGTON

Leroy S. Buffiington, architect, died February 16 in Minneapolis at the age of 83 years. In addition to having designed many public buildings in Minnesota, the Northwest and Canada, including the old state capitol, the St. Paul Union Station, and some of the University of Minnesota buildings, he was credited with the origination of the skyscraper.

The story of the development of the skyscraper is told in an Associated Press dispatch. In 1880 Mr. Buffington had just completed the Boston Block, a 7-story building using more cast iron and I-beams than was usual at that time. He bought two volumes of a translation of Viollet le Duc's discourses on architecture and read in them this paragraph:

"A practical architect might not unnaturally conceive the idea of erecting a vast edifice whose frame should be entirely of iron, and clothing that frame. But it cannot too often be repeated, iron should be left independent; it cannot be allied with masonry."

The idea caught Mr. Buffington's fancy. He began to make drawings and eventually evolved a plan for what he called a "cloudscraper," in which the masonry veneer was supported at each successive story on an iron shelf.

One of his old drawings showed a building 100 stories high, a prophecy which is expected to be fulfilled in New York in a few years. The original drawing and the grant of a patent for the world's first skyscraper are on file in the Patent Office in Washington. Mr. Buffington was derided as a crank and a dreamer and the building was never put up in the form he had envisioned. He received belated recognition in January, 1929, when Rufus Rand, who was then putting up a twenty-five-story building in Minneapolis, paid him one-eighth of 1 per cent royalties on the steel skeleton. The cost of the Rand Building was $1,800,000.

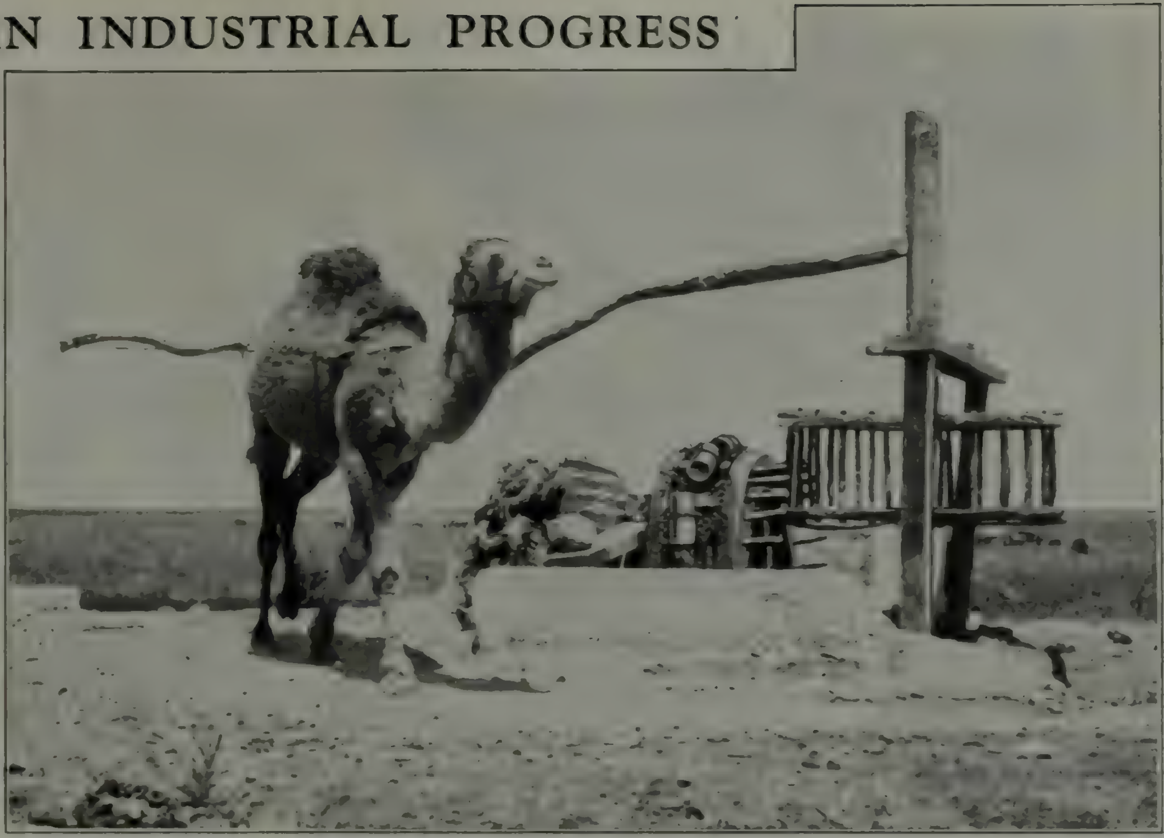
HOWARD K. JONES, PITTSBURGH ARCHITECT

Howard K. Jones, who died January 21, was one of the most widely known architects in western Pennsylvania. He was the senior member of the firm of Alden, Harlow and Jones, with offices in the Farmers Bank Building in Pittsburgh.

He was graduated from the Massachusetts Institute of Technology in 1896 and had long been a junior associate of the firm which he now headed. He was known for his contributions to the design and supervision of many private, public and semipublic buildings in the Pittsburgh district and the northwestern part of the State. Among these are the Farmers Bank Building, Carnegie Institute and Library at Schenley Park and several branch libraries, the South Hills High School, the Wilkinsburg Masonic Building, the Mutual Telephone Company Building and Luther Memorial Church of Erie, the R. B. Mellon residence on Beechwood Boulevard, and many residences in Sewickley, Pittsburgh and Erie.

Mr. Jones was an active member of the American Institute of Architects, a past president of the Pittsburgh Chapter of that Society, and had been re-elected to membership on its board of directors the day prior to his death.

CONTRASTS IN INDUSTRIAL PROGRESS

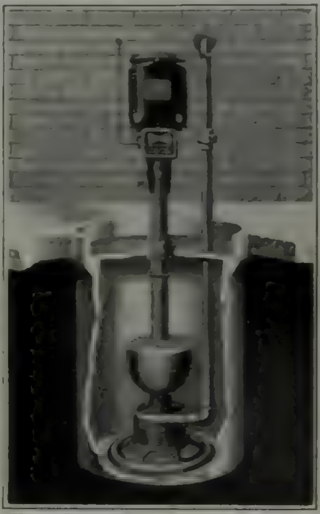


A one camel-power pump in Morocco

Perfectly content to spend his life traveling an inexorable circle, the camel here typifies the country which supports him. The centuries have left no mark mechanically on the sandy wastes known as Morocco, the land of desert warfare and religious fervor.

Water is elevated in the chain of earthen pots operated by the crude wooden device that is perhaps best described as a forerunner of a pair of bevel gears. Contrast this with the simple and efficient pumps we use today—equipment like the Penberthy Automatic Electric Sump Pump and Cellar Drainer, which are thoroughly automatic, fully dependable and have low operating costs.

Here indeed are the opposite ends of the march of progress.



Penberthy Automatic Electric Sump Pumps and Hydraulic Cellar Drainers for draining seepage water from basements, elevator pits, piping tunnels, etc.

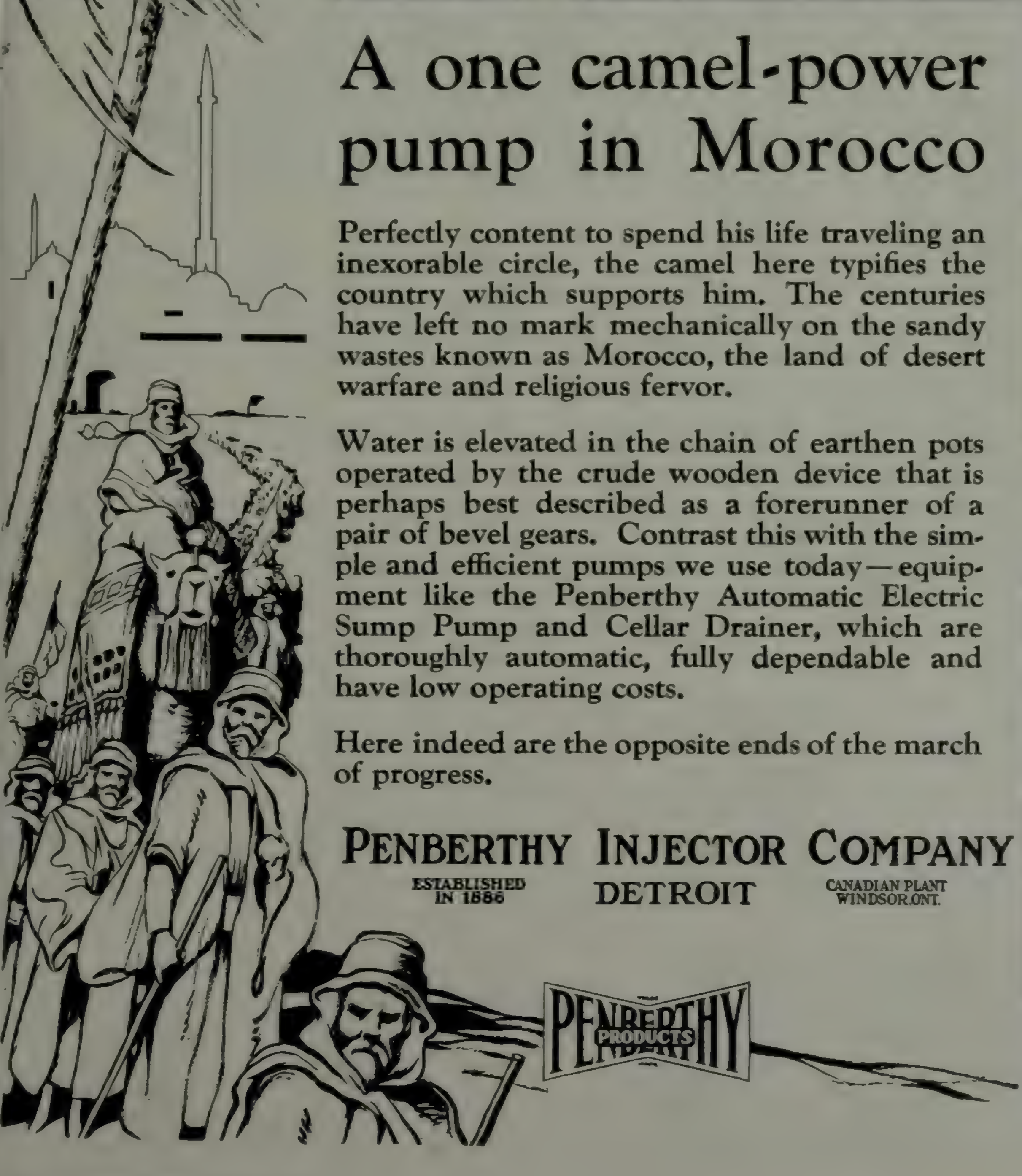
Many architects are specifying these pumps to the complete satisfaction of their clients. Penberthy Pumps are quickly obtainable from practically all leading jobbers.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

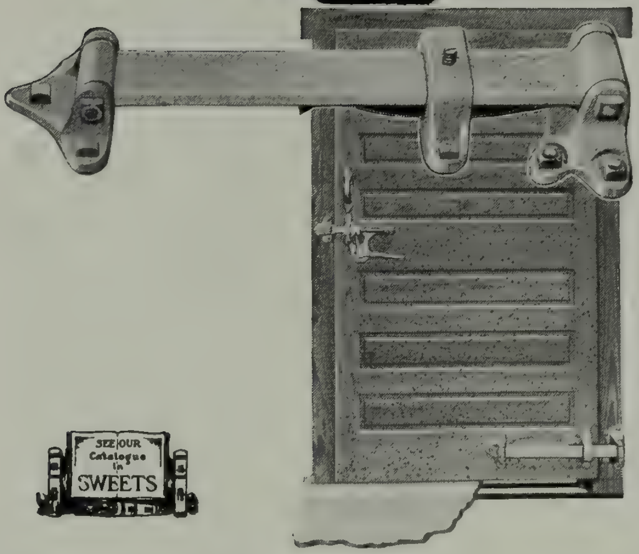
DETROIT

CANADIAN PLANT WINDSOR, ONT.



PENBERTHY PRODUCTS

A RIGID HINGE is NOT "Just as good"



All Jamison and Stevenson Doors are equipped with Spring Hinges, because long experience has shown that a rigid hinge is unable to compensate for wear. When a door doesn't seal at the heel, refrigeration escapes. Rigid hinges can't prevent this. Ball bearings don't help. Only the pressure of a spring hinge will save the cold air you pay to create. *The Jamison Hinge is also adjustable.*

Another exclusive feature of Jamison & Stevenson Doors is the patented WEDGETIGHT FASTENER . . . Faster in closing —faster in opening—*forces* the door tighter on its seal.

JAMISON COLD STORAGE DOOR CO.
CONSOLIDATING JAMISON COLD STORAGE DOOR CO., INC. AND STEVENSON COLD STORAGE DOOR CO.
HAGERSTOWN, MARYLAND, U. S. A.
Oldest and largest makers of Cold Storage Doors in the World
. . . . *Branch Offices:* 300 Madison Avenue, NEW YORK . . . .
. . . . Builders Bldg., 228 N. La Salle Street, CHICAGO . . . .
. . . . . . Samuel H. Stevenson, 116 West 24th St., CHESTER, PA. . . . .
2650 Santa Fe Avenue, LOS ANGELES . . . 333 Market St., SAN FRANCISCO
D. E. Fryer & Co., SEATTLE & SPOKANE . . . Southern Representatives, address Hagerstown . . . *Foreign Agents:* Armstrong Cork Co., Ltd., LONDON . . . The von Hamm-Young Co., Ltd., HONOLULU . . . Okura & Co., JAPAN

Jamison & Stevenson Cold Storage Doors

OLDEST and LARGEST makers of Cold Storage DOORS

NOTES IN BRIEF

JOINT SESSION: A.I.A. AND PRODUCERS' COUNCIL

The eighth annual meeting of the Producers' Council, Inc., will be held at San Antonio, Texas, April 13, 14 and 15.

The opening session, April 13, will be held jointly with the American Institute of Architects. Several questions of importance will be discussed; "Co-operation in the Building Industry" and "What shall we do to place Quality Competition above Price Competition?"

CHICAGO REGIONAL MEETING

The Producers' Council Club of Chicago has set March 11 for the annual regional meeting of producers and architects located in that section. The usual attendance is several hundred. Louis La-Beaume, will be the guest of honor.

The Chicago Club in its regular bi-monthly luncheon meeting, February 24, had as its speaker H. B. Wheelock, who spoke on "Cooperative Suggestions by an Architect."

LECTURES BY IRVING K. POND

The College of Architecture, University of Michigan, announces the following lectures by Mr. Irving K. Pond:

- Thursday, March 19th: Laying the Foundations of Architecture—What Architecture has meant in the Ages.
- Friday, March 20th: Possibilities in the American Expression—Toward an American Architecture.
- Thursday, March 26th: Psychology of Form—Human reaction to Mass, Details and Direction.
- Friday, March 27th: Architecture in Education—Consideration of Architecture as a Cultural Study.

Mr. Pond is a past president of the American Institute of Architects. He is a graduate of the University of Michigan, where he has designed the Michigan Union and the Michigan League Building.

EXHIBITION OF SOUTHERN CALIFORNIAN ARCHITECTURE

An annual architectural exhibition, marking the culmination of architectural development in Southern California during 1930, is being held from March 2nd to 14th in the Architects Building, Los Angeles. The exhibition includes several hundred photographs and sketches of residences, commercial buildings, theaters and churches which have been built during the past year, as well as many now under construction, and is indicative of the type of architecture being developed in California.

(Continued on page 96)

Beautiful MEDUSA • WHITE

AGAINST AN EVERGREEN BACKGROUND

What could be more beautiful than this white stucco home against its background of dark evergreens? Surely the architect made the most of his location. Here, as in thousands of other cases, the selection of Medusa White Portland Cement Stucco produced a gem of architectural beauty for its owner, Joseph Carmen of Spokane, Washington. The home was designed by Kirkland Cutter and built by Dawson & Dahlberg of Tacoma, Washington. ● Medusa White Portland Cement, both plain and waterproofed, white, lightly tinted or richly colored, lends itself to original and distinctive architectural treatments. Whether used in stucco, cast stone or as a mortar, it should be considered on every job where lasting beauty, resistance to moisture and a non-staining quality are desired. Let us send you specifications and details for the various uses of Medusa White Portland Cement, plain and waterproofed.

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WHITE PORTLAND CEMENT

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Manufacturers of Medusa Gray Portland Cement (Plain and Waterproofed); Medusa Waterproofing (Powder or Paste); Medusa White Portland Cement (Plain and Waterproofed); Medusa Portland Cement Paint and Medusa-Mix, the Masonry Cement

A
NOTABLE
STRUCTURE

LASALLE
WACKER
BUILDING
◆
CHICAGO

Another of Chicago's monumental structures. Robert W. Hunt Company inspected the structural steel at both mill and shop and also tested all cement, reinforcing bars and concrete cylinders.

Holabird & Root were the Architects, and the General Contractor was the Hegeman-Harris Company.

For complete information about Hunt inspection, tests and supervision for buildings and structures see Sweet's Architectural Catalogues A-119 or write us.

ROBERT W. HUNT COMPANY
Engineers
Inspection — Tests — Supervision
Insurance Exchange
CHICAGO
All Large Cities

H

The exhibition is being held under the auspices of the State Association of California Architects, the Los Angeles Architectural Club, the Pasadena Architectural Club, the Architects League of Hollywood, the Certificated Architects of Beverly Hills, the Long Beach Architectural Club, and the Santa Barbara and San Diego Chapters of the American Institute of Architects.

EXPOSITION OF INDIAN TRIBAL ARTS

The Exposition of Indian Tribal Arts, now being organized, will present, for the first time, a comprehensive and representative exhibition of the arts and crafts of all the Indian tribes now living in this country.

The Exposition will open at the Grand Central Art Galleries in New York City, in November, 1931. After a month there, it will tour the country.

CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following-named open competitive examinations:

Associate Engineer, $3,200 to $3,700 a year
Assistant Engineer, $2,600 to $3,100 a year

Applications for associate engineer (optional branches—architectural, construction, heating and ventilating, and ordnance) and assistant engineer (optional branches—aeronautical, architectural, electrical, heating and ventilating, mechanical, structural, construction, and fire prevention) must be on file with the U. S. Civil Service Commission at Washington, D. C., not later than April 1, 1931.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the Secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

UNEMPLOYMENT RELIEF

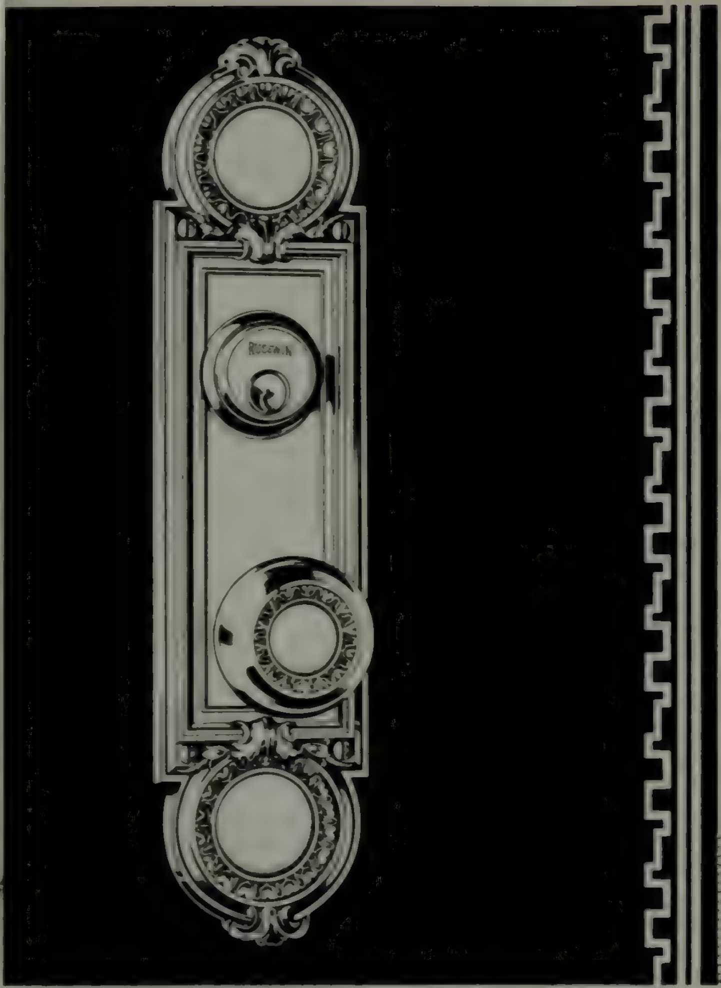
A resolution urging that the United States treasury department distribute part of the government building activities, undertaken to stimulate employment, among private architects and builders, was adopted at the last meeting of the Indiana Chapter, American Institute of Architects, held in Indianapolis. Frederick W. Garber of Cincinnati, regional director for the Great Lakes district, said in a speech that architects can be of real service to their communities by serving on boards that pass on proposed building projects in their cities.

The resolution adopted is in line with the effort of the national organization to support President Hoover in his governmental building program.

THE ALEXANDER THOMSON TRAVELING STUDENTSHIP

The competition is open to students of architecture between the ages of 19 and 28 years, residing in the United Kingdom and Southern Ireland. Copies of the conditions may be obtained on application to William MacLean, Secretary, Glasgow Institute of Architects, 21 West George Street, Glasgow, C.2.

(*Continued on page 98*)



EXCLUSIVE DESIGNS BY

RUSSWIN

french renaissance ✣ ✣

DARCY . . . *an exclusive RUSSWIN creation . . . owes its inspiration to the French Renaissance, noted for its graceful employment of the delicate arabesque, the pierced shield and cartouche. It is especially appropriate for public buildings or homes where the architecture is classical in design. Made of brass or bronze base metals, like all RUSSWIN Hardware, it assures a life-time of unfailing, trouble-free service under the most rigorous usage. Your architect or contractor knows RUSSWIN quality. Write to us for descriptive booklet showing exclusive RUSSWIN Hardware for leading periods of design.*

Whatever your hardware needs may be in home or office building, simple or elaborate, the wide and varied range of authentic designs by RUSSWIN assure full accord with architectural style in every lock, hinge, knob or door closer.

This advertisement is appearing in such mediums as Collier's, House Beautiful, American Home, Christian Science Monitor, etc.—read by millions of people monthly.

For the architect's convenience, RUSSWIN hardware is illustrated and described in Sweet's Catalogue . . Pages C-3700; C-3775

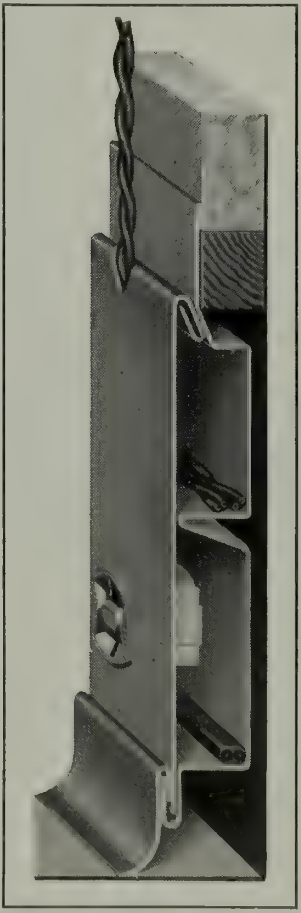
R&E
SINCE 1839
RUSSWIN
RUSSELL & ERWIN
DISTINCTIVE HARDWARE

RUSSELL & ERWIN MANUFACTURING COMPANY (THE AMERICAN HARDWARE CORP., SUCCESSOR)
New Britain, Connecticut New York Chicago London

JUNIOR CONDUO-BASE

...for Convenience Outlets

THE EASIEST and CHEAPEST way to provide convenience outlets at any point along the baseboard or at any point in the floor is by means of Junior Conduo-Base.



Costs no more to install than ordinary baseboards. Enables you to change telephone or light wiring outlets to any other point along the perimeter of a room, by simply tapping the proper wires, mounting a new receptacle in the new location, and replacing the face plate . . . just a few minutes' work . . . no expense, no mess.

We will be glad to send you detailed information in convenient form for filing. Write for Junior Conduo-Base Bulletin to:

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ConduoBase
PATENTED
TRADE-MARK

"WHO DESIGNED WHAT?"

As F.P.A. observed in his famous column, "The Conning Tower," in the *New York World:*

"We never shall understand why architecture is so slightly appreciated, especially in a city that has conspicuous examples of its beauty.

"It appalled us, as it appals us every time we realize the truth of it, to know how few persons know who designed what. In a group of ten persons known to be fairly well informed not one knew who had designed the Woolworth Building, although Cass Gilbert, as the architect, got a prize for it only a few weeks ago. Only one in ten knew who had designed the Chrysler Building, and none who was the Empire State Building's architect."

BOK AWARD TO PAUL P. CRET, ARCHITECT

Presentation of the tenth Philadelphia award has been made to Paul P. Cret, architect, for his part in the beautification of Philadelphia.

The award was founded in 1921 by the late Edward Bok and is given annually to the individual who in the preceding year "shall have performed or brought to its culmination an act or contributed a service calculated to advance the best and largest interests of the community of which Philadelphia is the center."

The award consists of a check for $10,000 and an embossed scroll contained in an ivory casket. This is the first time an architect has been honored by the award.

Mr. Cret is professor of design in the School of Fine Arts at the University of Pennsylvania, consulting architect-in-chief to the American Battle Monuments Commission, and a member of the Philadelphia art jury. He designed the Delaware River Bridge between Philadelphia and Camden, the Rodin Museum and many other outstanding architectural masterpieces in Philadelphia. He helped design the Pan-American Union Building in Washington, the Valley Forge Memorial Arch, Indianapolis Public Library and the Detroit Institute of Fine Arts.

ROTCH TRAVELING SCHOLARSHIP

Preliminary examinations for the Rotch Traveling Scholarship will be held this year on April 2 and 3.

There will be sketches "en loge" April 6 and 8, open to all who are eligible under rules of the scholarship. From the logistes there will be made a selection of four who will be admitted to final competition April 18.

The award will be made on recommendation of a jury, and the candidate chosen will be given the scholarship for a time to be determined by the committee in consultation with the winner.

The amount of the prize is $3,000. The Boston Society of Architects has offered a second prize of $100 to be awarded to the candidate placed second.

For further information apply to C. H. Blackall, secretary, 31 West Street, Boston.

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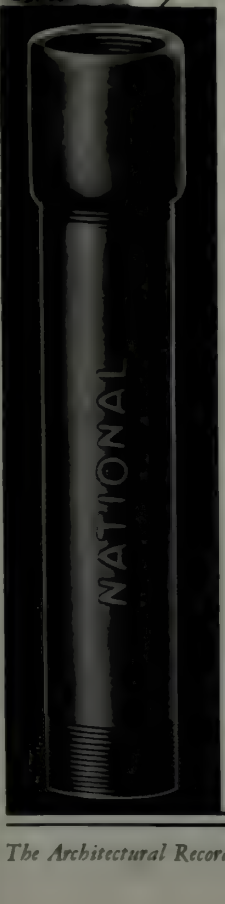


IN ONE OF THE WORLD'S GREATEST MEDICAL CENTERS

The COLUMBIA-PRESBYTERIAN MEDICAL CENTER
NEW YORK CITY

Architect: James Gamble Rogers, *Engineer:* Werner Nygren,
General Contractor: Marc Eidlitz & Son, *Heating Contractor:*
Gillis & Geoghegan, *Plumbing Contractor:* W. G. Cornell Co.

A great modern hospital lays exacting requirements upon those who build it. Within its walls, temperature, air, light, noise, vibration, and whatever else has influence must be controlled in the interest of the skilled work that is to be done, the precise use of delicate instruments that are to be employed, the sensitive processes of nature that are to be invoked, for the restoration of health.

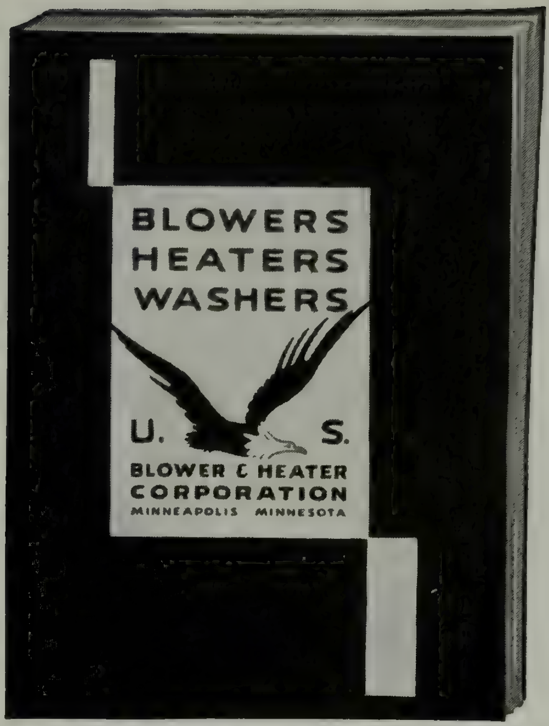
All these provisions must be guarded. No makeshift devices, no compromises of quality in material or thoroughness in workmanship, can be tolerated. It is an evidence of merit for any equipment or any product to find important use in such a building.

In the magnificent structures that make up the Columbia Medical Center in New York, NATIONAL was used for the major pipe tonnage. Superior special processes (applied to butt-weld sizes ½ to 3-inch) make it Scale Free and give a uniform, dense surface to resist corrosion. Serving in many of the finest buildings in the country—NATIONAL has proved worthy of the confidence that has made it—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
Subsidiary of United States Steel Corporation

NATIONAL PIPE



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HERE is our new catalog of air conditioning equipment — showing the complete line of blowers, unit heaters and air washers —each of proven, accepted design, each with important new features and refinements, engineered and built by the

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and HEATER CORPORATION

This catalog also contains a Technical Section with information of practical value to architects and engineers.

Write for your copy of this new complete catalog.

UNITED STATES BLOWER
and HEATER CORPORATION
2135 Kennedy St., N. E.
MINNEAPOLIS, MINN.

BOOTH TRAVELING FELLOWSHIP

The George G. Booth Traveling Fellowship in Architecture will again be awarded by competition this spring. The income from the fellowship fund is $1200. The competition is open to unmarried men whose thirty-first birthday comes after April 11, 1931. Candidates should be graduates in architecture of the University of Michigan or should have completed in residence substantially the last two years of the four-year course.

The program will be handed to candidates on April 11th, when the preliminary sketch is to be made. The problem is to be developed during the two weeks beginning on Monday, April 13th.

Those intending to compete should write as soon as possible to Professor Emil Lorch, College of Architecture, University of Michigan.

ADVERTISING THE ARCHITECT

The Architects League of Hollywood has in preparation a series of articles dealing with the value and scope of the architect's services. These articles are being mailed direct to property owners, building and loan associations and prominent realtors of Hollywood and Los Angeles.

The first article has just been put in the mails. It concerns "The Economic Value of an Architect" and opens thus:

"Would you willingly enter into a building contract in which you had little or no protection? You quickly answer—'Why, of course I would not.' True, no one would knowingly do this, and yet there are hundreds of owners who innocently and in good faith enter into building contracts that offer them absolutely no protection whatever, and in which their carelessness is daily costing them many thousands of dollars.

"It is quite obvious that for an owner to protect his interest under a building contract it will be ABSOLUTELY NECESSARY for him to have written into the contract a complete and detailed list and description of every item going into the building, specifying the size, make and quality of each of the many hundreds of materials, also the workmanship with which each is to be installed. He must also have incorporated into the contract a complete set of the legal conditions under which the building is to be erected. The only person qualified and appointed by the State of California to do this work for you is an Architect."

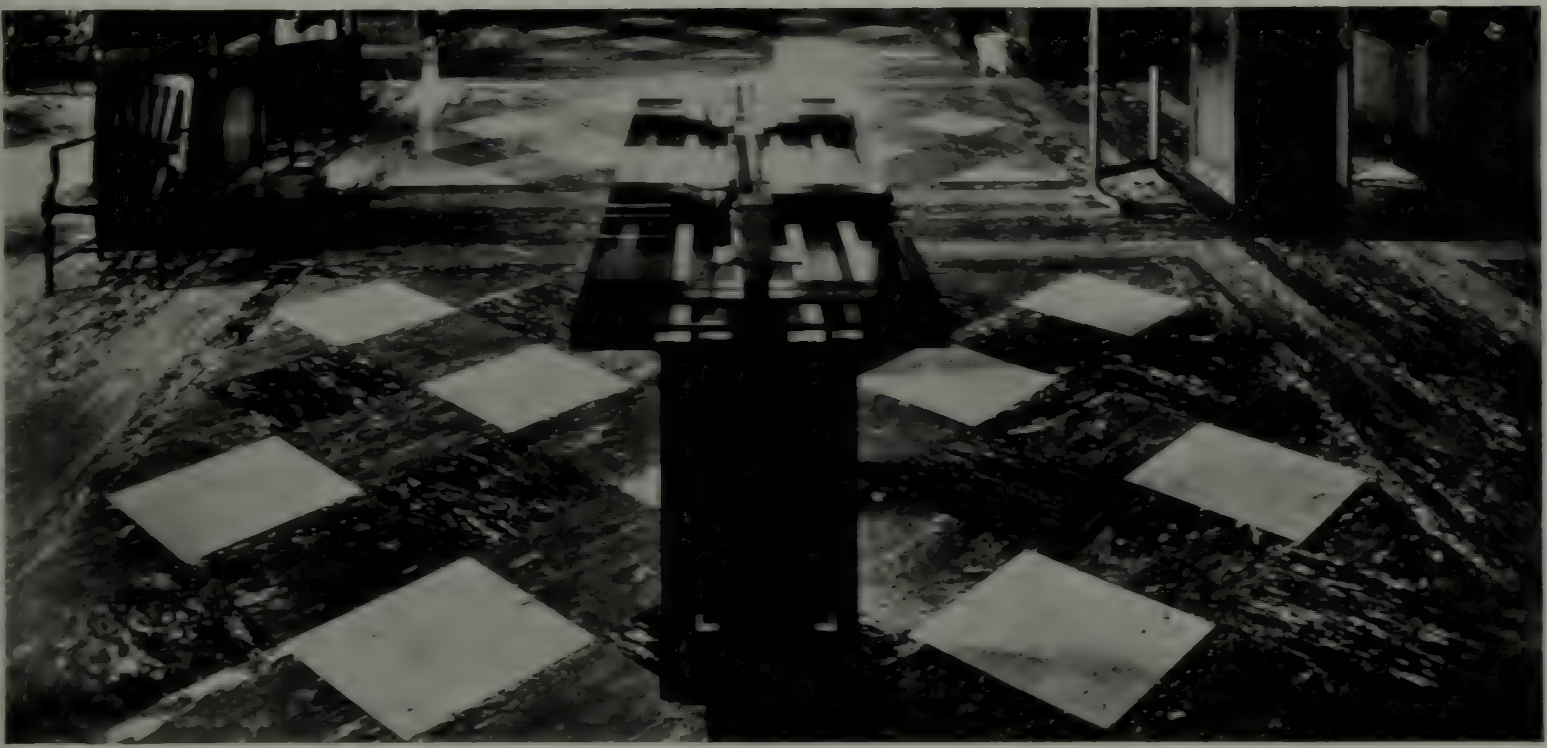
SALEM ROOFS

An attractive brochure with the title, "Salem Roofs," has been issued by the Johns-Manville Architectural Service.

ARCO RADIATOR

A new type of radiator is announced by the American Radiator Company. It offers maximum heating effectiveness with minimum space requirement, ease of installation and ease of cleaning.

In design . . in service . . RUBBER invites your skill to full expression



Northwestern Bell Telephone Company, Des Moines, Iowa: George B. Printz and Proudfoot, Souers & Rawson — Architects: Goodyear Rubber Flooring installed by Younker Bros.

IN this day of unembarrassed drawing, rubber invites the architect to plan floors with unrestricted skill.

Rubber Flooring is available in many colors and sizes—it is adaptable to any style or period of decoration. But whatever the style, its utility matches its beauty. It requires no special finish and is quickly cleaned with water. It replaces in identical color and texture. It is fire resistant. Its muffling resilience underfoot saves fatigue everywhere. It is famously durable. In homes, hotels, offices, schools, shops, apartments, Rubber Flooring meets a rigorous economic test without sacrifice in charm.

Goodyear designers are always anxious to coöperate with architects. For samples, whole floor designs, and booklet of detailed specifications — A. I. A. File 23C — just write to Goodyear, Akron, O., or Los Angeles, Cal.

THE GREATEST NAME IN RUBBER

GOODYEAR

RUBBER FLOORING

Comfort added to the Bathroom is comfort added to the home

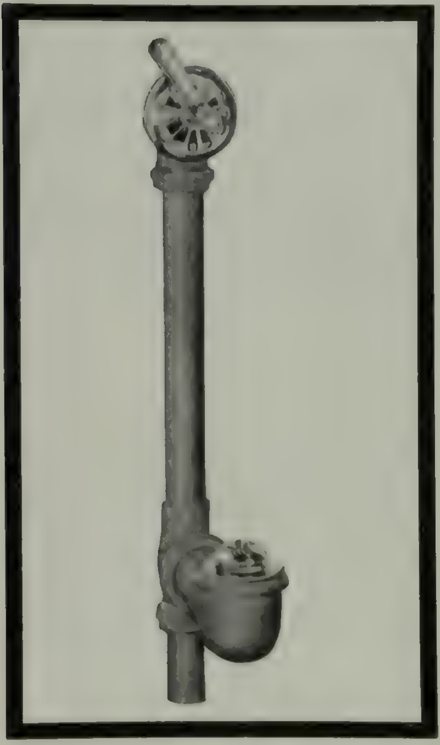
PLUMBING fixtures increase the livable qualities of a home in the same manner as comfortable furniture. People are fast beginning to realize that it is sheer folly to be content with old, unserviceable plumbing fixtures which irritate and annoy more often than please.

Hence, Mueller, maker of finest plumbing goods since 1857, has turned a heeding ear to present-day demands and presents fixtures which are in good taste and pleasing to behold but also more convenient to use.

Consider the two fixtures illustrated and described below. In them Mueller artistry has been added to Mueller quality, resulting in a combination which is unequalled. A letter will bring you full details of these fixtures as well as a large array of their distinctive companions.

MUELLER CO. (Established 1857). *Factory:* Decatur, Ill. *Branches:* New York, 135th St. & Walnut Ave., Bronx, Telephone Ludlow 8629-30-3; Dallas, Atlanta, Los Angeles, Chicago. *Canadian Factory:* MUELLER, Limited, Sarnia.

ALL METAL WITH INTEGRAL STOPS



Exterior H-5865

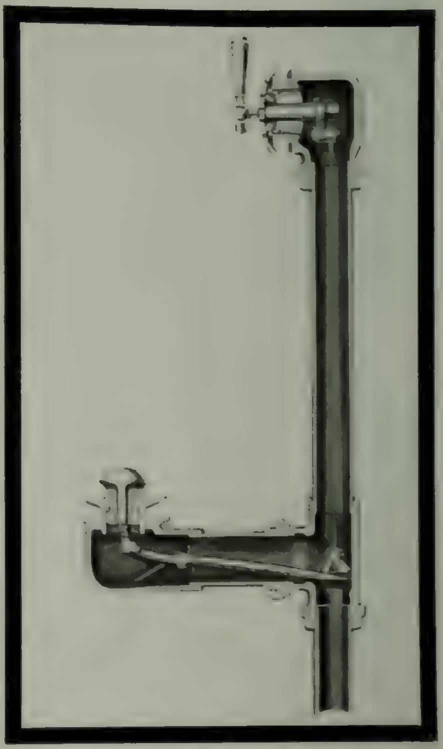
The *Mueller* Pop-up Bath Drain positively removes that bugbear of all plumbing installations—the necessity of a panel behind the tub.

H-3965

Sizes ½" and ¾"

H-3965 Mueller Over-the-rim Tub Filler with cast metal spout and spout escutcheon. Supply valves with screw driver slotted integral stops; four-arm handles with interchangeable metal caps indexed "H" and "C"; ground joint unions and renewable seats.

Finish: Chromium plate only.



Interior H-5865

H-5865 Mueller Pop-up Bath Drain. Size 1½". 17 gauge only. Tee outlet provides for 1½" slip joint connection, 1½" wiped joint connection, or 1¼" I.P. connection.

Finishes: Rough brass with parts inside tub nickel plated.

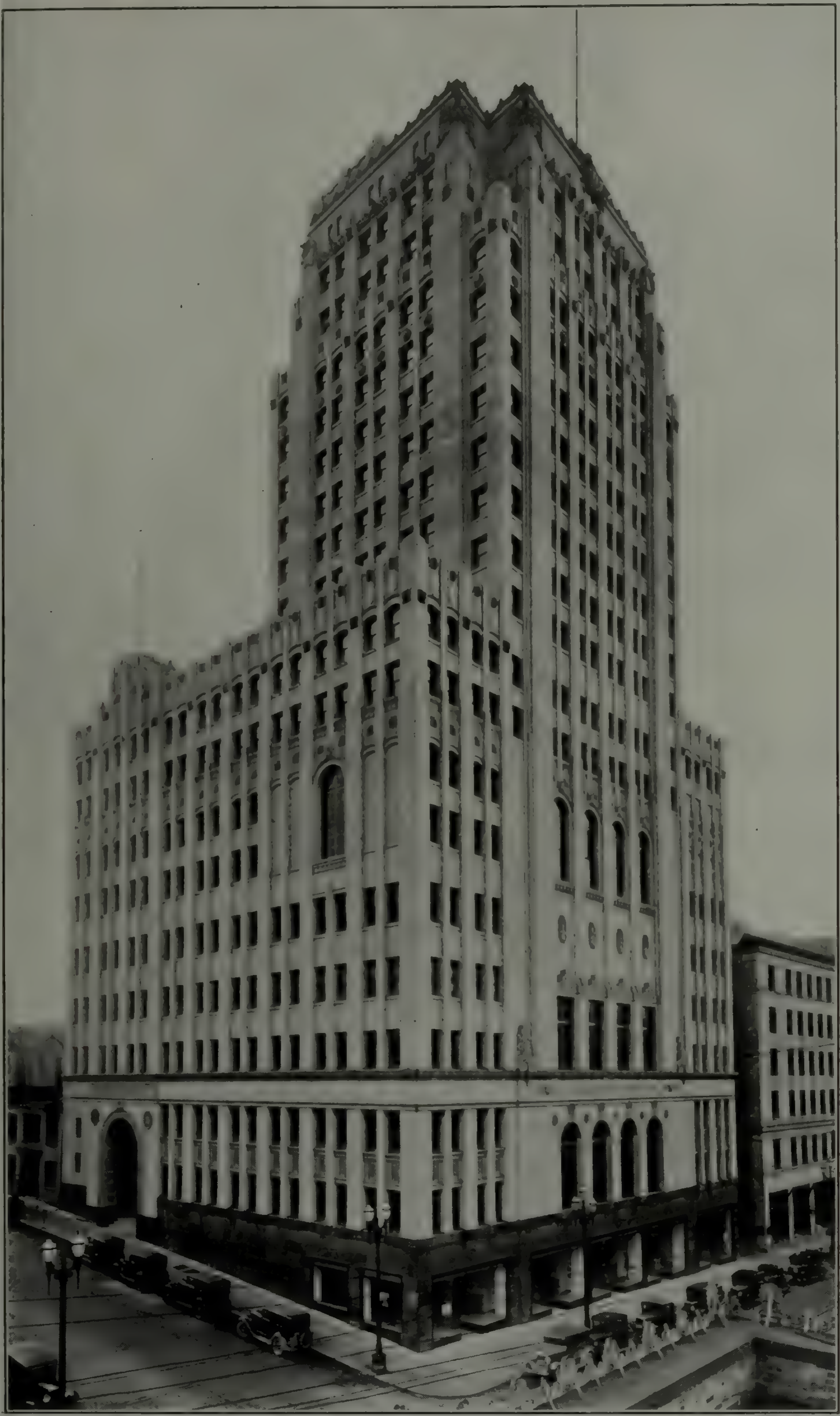
Rough brass with parts inside tub chromium plated.

All working parts removable from inside of the tub. The seal is within the tub. No pockets of dirty water to foul the tub when refilled.

MUELLER

Trade-mark Reg. U. S. Pat. Office

WASHINGTON ATHLETIC CLUB BUILDING



SEATTLE

WASHINGTON

■

Architect—Sherwood Ford, Seattle

Engineers—Hall and Stevenson, Seattle

Contractors—Sound Construction and Engineering Company, Seattle

■

A large tonnage of Bethlehem Wide-Flange Structural Shapes—known to Architects, Engineers and Contractors everywhere as "Bethlehem Sections"—was used in the steel framework of this magnificent structure.

BETHLEHEM STEEL COMPANY
General Offices: Bethlehem, Pa.

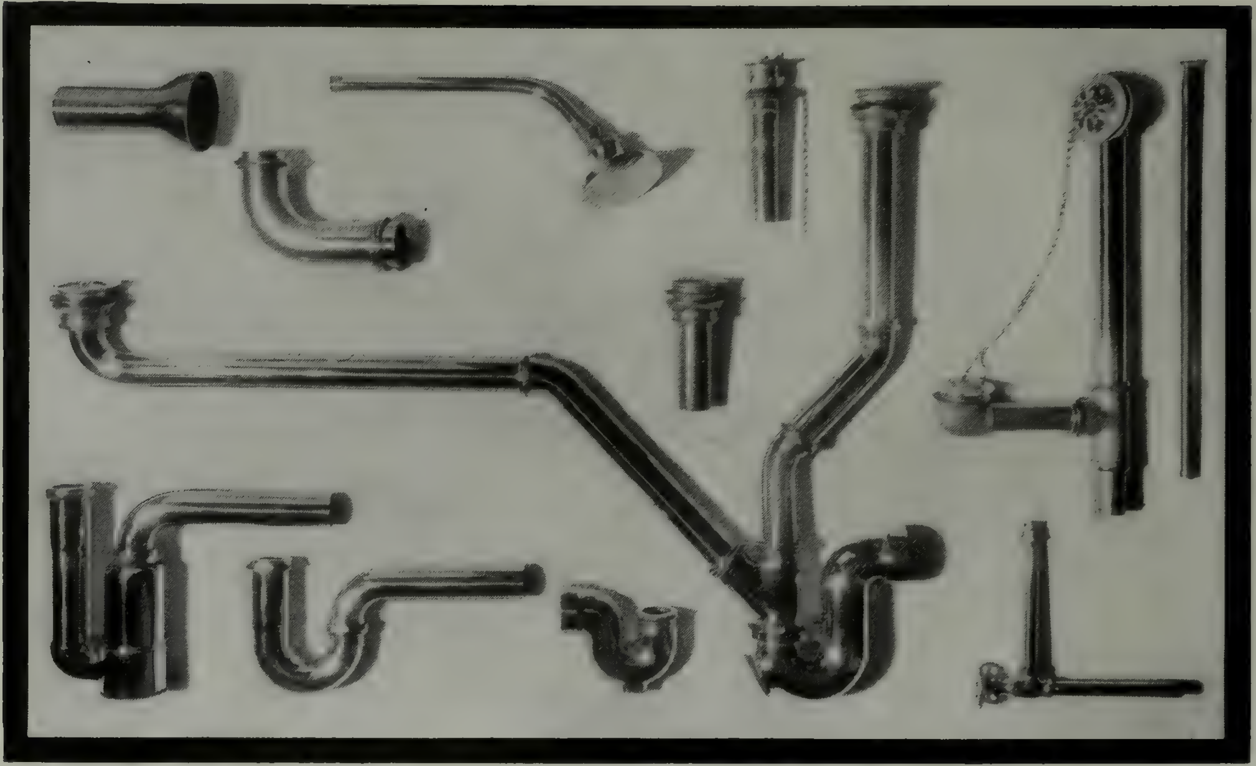
District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Portland, Seattle, Honolulu.

Export Distributor: Bethlehem Steel Export Corporation, 25 Broadway, New York City.

BETHLEHEM Wide-Flange

HOLD STRUCTURAL SHAPES



FROM THREE STANDPOINTS . . .

SPEED! . . . Scovill plumbers' tubular brass goods are designed for installation with a minimum of labor. No detail which can simplify the plumbers' task has been overlooked.

Economy! . . . The great variety of the Scovill line affords an opportunity for selection of exactly the proper items for each installation —without waste, without unnecessary adaptation.

Long life! . . . Scovill tubular goods are produced under strict laboratory control. Every ounce of metal is made to formulas of proved excellence. Constant testing maintains uncompromisingly high standards.

It is upon these three bases that Scovill brass goods are regularly specified by many leading architects. Scovill quality is the result of long experience with plumbing problems and practices. The uniform superiority of the line assures the architect that full satisfaction will result when the Scovill name is included in the specifications.

A COMPLETE LINE

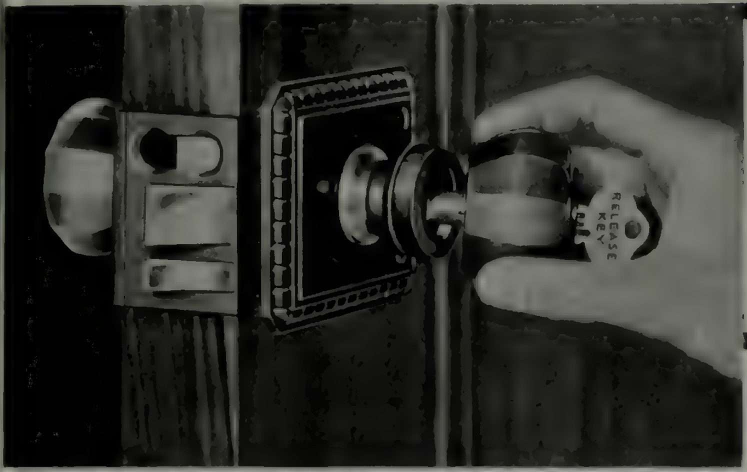
Scovill Flush Valves . . . Shower and Bath Fixtures . . . Tubular and Miscellaneous Plumbers' Brass Goods for General Plumbing Requirements.

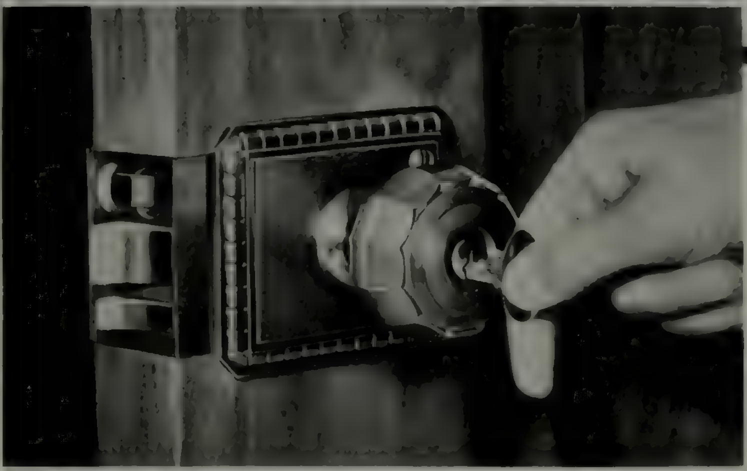
SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION, WATERVILLE, CONNECTICUT

Scovill

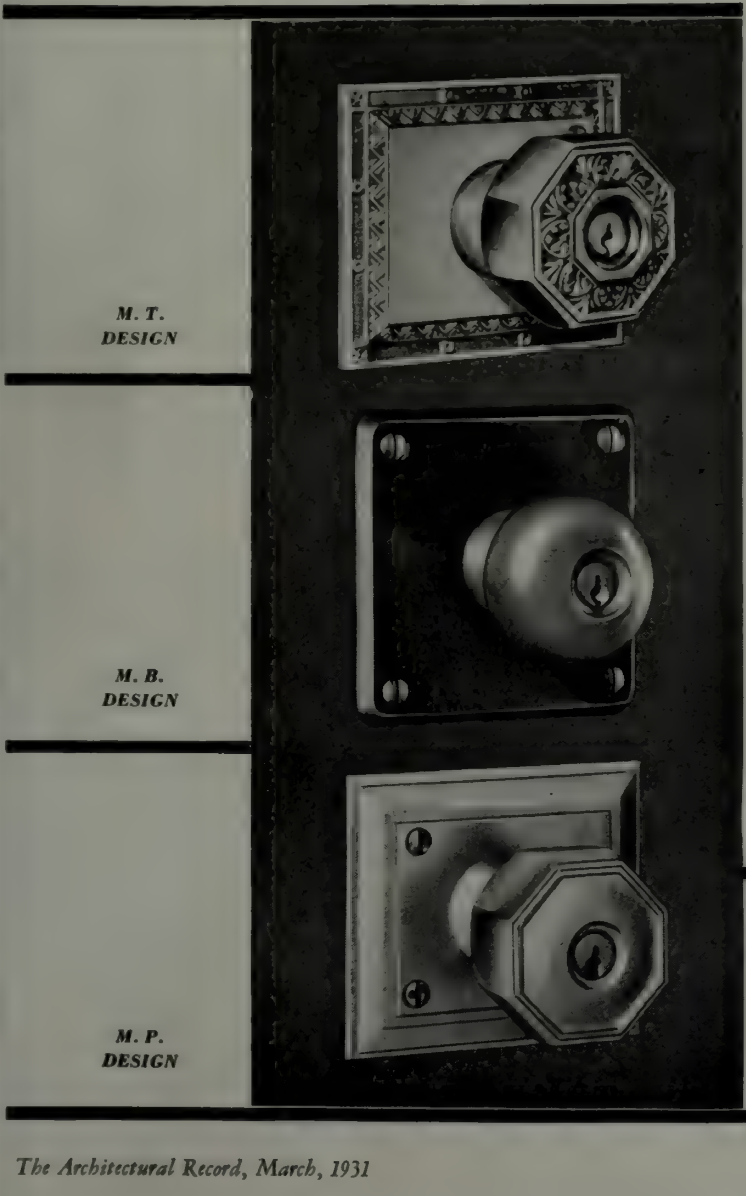
SCOVILL

Proprietary design of the Fisher Building, Detroit





The Sargent Union Lock in standard designs



ORIGINAL KEY CONTROL

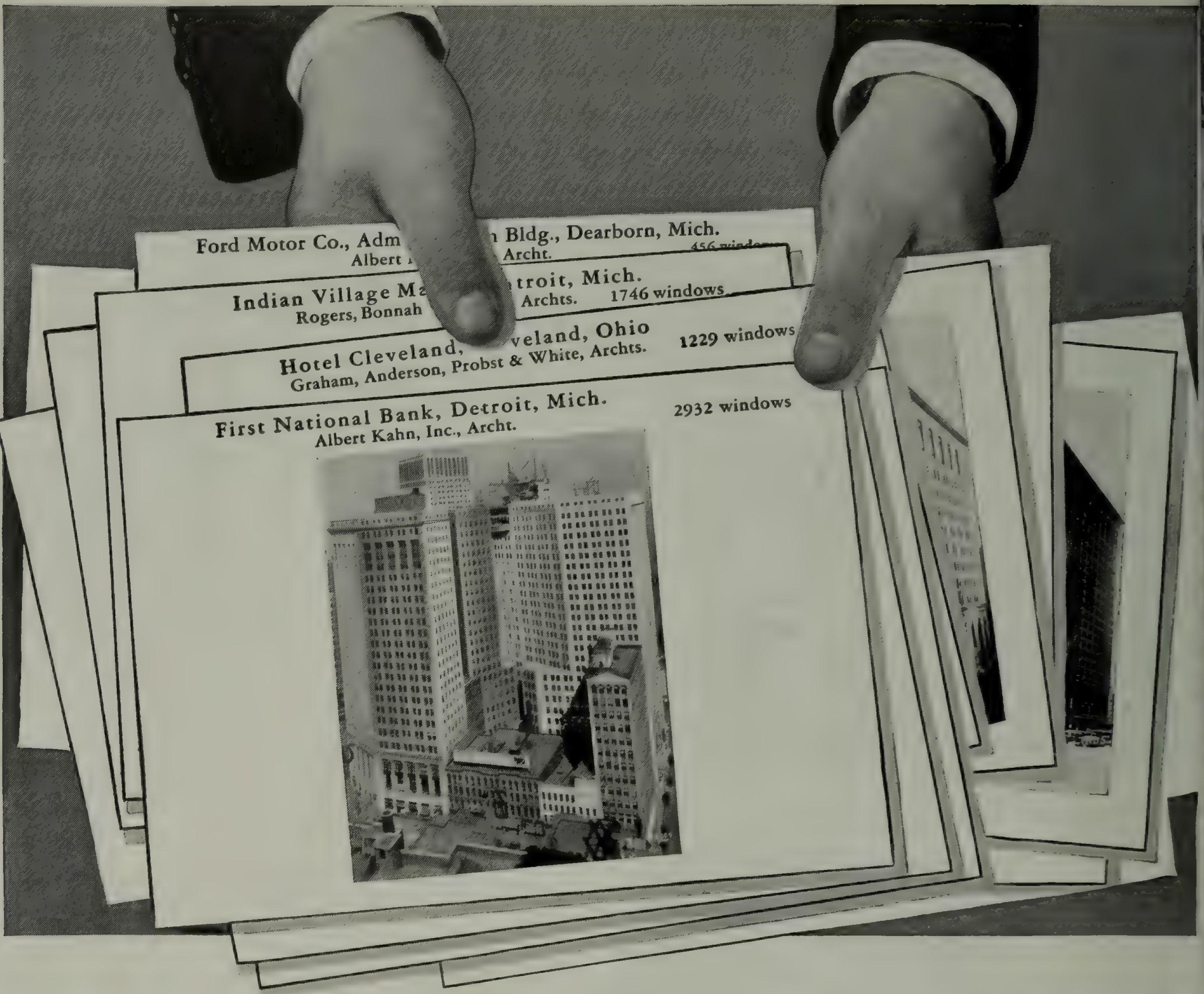
IN SARGENT UNION LOCKS FOR MODERN BUILDINGS

WITH this feature any Sargent Union Lock may be placed under a new key control in a moment's time. A special key removes the knob. The cylinder may then be exchanged and the knob replaced with ease. This is ideal equipment for modern commercial structures. Building managements, at negligible cost, may offer every new tenant a lock that only his and the master keys will fit.

The Sargent Union Lock is easy to install—all parts are in one complete unit. Its operation is smooth and sure. Of solid brass or bronze, it is made in beautiful standard designs or in proprietary patterns for particular structures. Our illustrated booklet, "Important and Exclusive New Features in Locks for Office Buildings," will be sent you on request. It explains in detail the Sargent Union Lock with demountable knob and exchangeable cylinder. Sargent & Company, New Haven, Conn.; 295 Madison Avenue, New York City; 150 North Wacker Drive, Chicago; Belleville—Sargent & Company, Ltd., Belleville, Ontario, Canada.

Our line is adequately represented in Sweet's, 1931 edition, volume C, pages C3780 to C3878.

SARGENT
LOCKS AND HARDWARE


Ford Motor Co., Adm n Bldg., Dearborn, Mich.
Albert Archt.
456 windows
Indian Village M troit, Mich.
Rogers, Bonnah Archts. 1746 windows
Hotel Cleveland, veland, Ohio
Graham, Anderson, Probst & White, Archts. 1229 windows
First National Bank, Detroit, Mich.
Albert Kahn, Inc., Archt.
2932 windows

Maintenance Costs Cut in Half!

Both sashes are completely reversible, allowing any employee to clean the windows from the INSIDE, safely and speedily. Saves time and money.

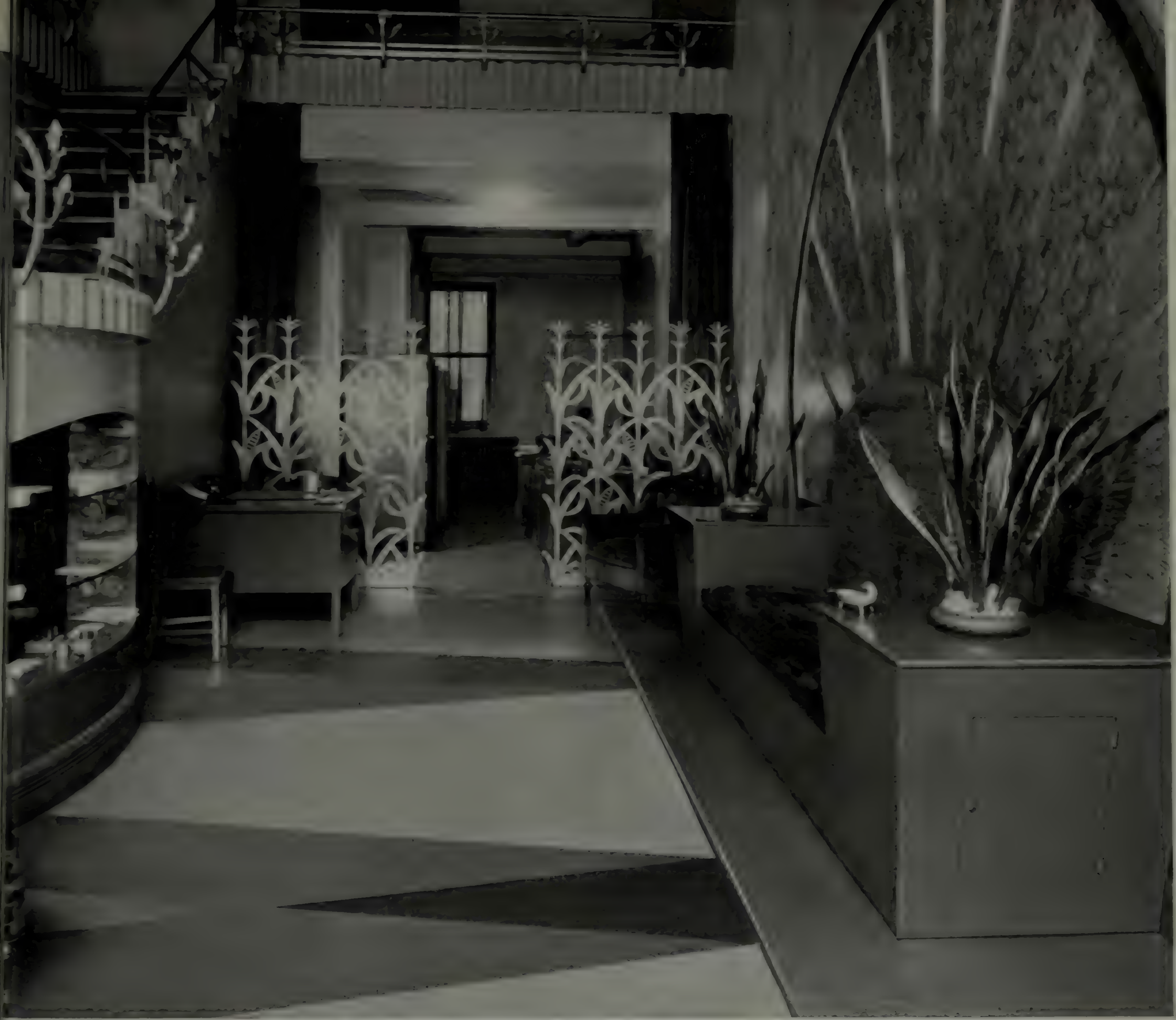
WINDOWS cleaned from the INSIDE in one-half the time and at one-half the cost of ordinary, old-fashioned windows. Eliminates high insurance risk—makes for unusual savings.

Office buildings, hospitals, schools, and institutions all over the country *prove* that Williams Reversible Window Equipment is the most efficient means to cut upkeep costs. Write for catalog.

THE WILLIAMS PIVOT SASH COMPANY
East 37th St. at Perkins Ave., Cleveland, Ohio

For 27 years manufacturers and installers of Reversible Window Equipment.

WILLIAMS REVERSIBLE
WINDOW EQUIPMENT
Clean Your Windows from the Inside



tion Room, Walker-Gordon Milk Co., New York. E. Coit, Architect

Floors to your order

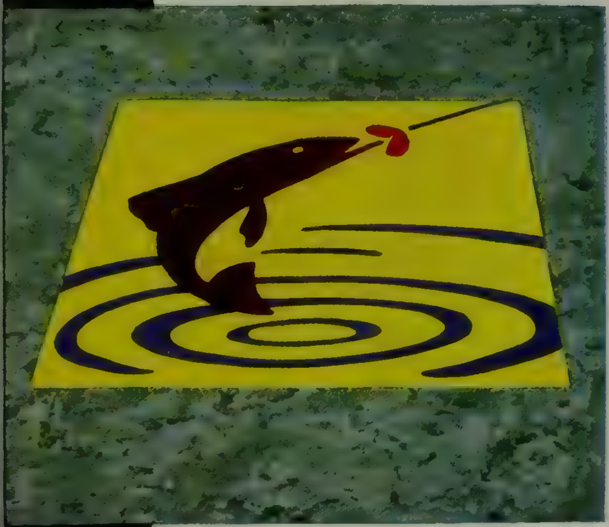
Above is illustrated a Sealex Linsignia inset in a Veltone floor. See the next page for description of this interesting Congoleum-Nairn innovation

Quantity production. Shoes by the thousand. Automobiles by the mile. And yet, for many of us, the older idea of "made-to-order" will never lose its special appeal. There is a satisfaction in wearing clothes tailored to your measure—in designing an interior that departs boldly from trite standards.

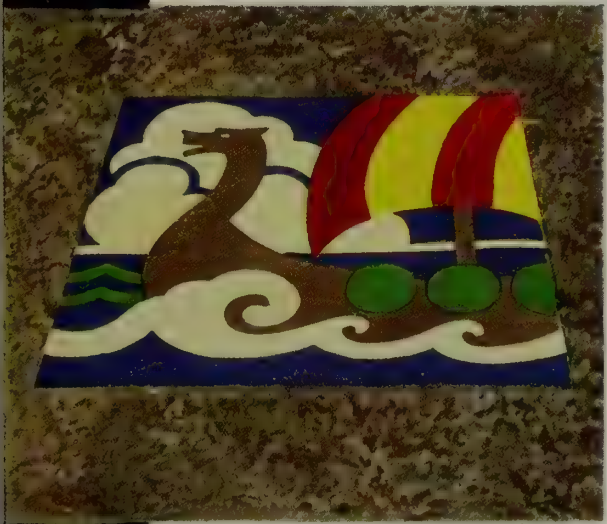
Of all the raw materials of floors, modern linoleum (not, of course, the cheap form commonly used in kitchens) is the one that best lends itself to the made-to-order idea.

First, because linoleum can so easily be cut into any desired shape. Second, because modern linoleum has become intrinsically beautiful. On the next page are described the new color effects in Sealex Linoleum—and a new service which makes "floors to your order" comparatively inexpensive.

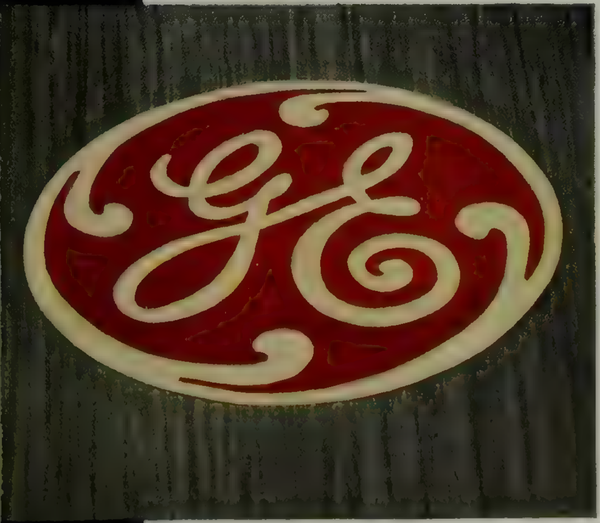
Continued on next page



Linsignia, in a field of Sealex Veltone, "*Delphi*" pattern.



Linsignia, in a field of Sealex Veltone, "*Araby*" pattern.



Linsignia, in a field of Sealex Jaspé, dark gray.

Immediately above is a Linsignia featuring the monogram of the General Electric Co. The other three are samples of our standard designs, inset in fields of Sealex Linoleum:—"Ancient Galley"; "The Strike", for club or fisherman's den; "Caduceus", for doctor's office or hospital.

Continued from preceding page

Recent improvements in custom floor service

New colors: **Sealex Linoleums offer a wide variety of colors and color effects extremely suitable for use in made-to-order floors. Most striking and original of all are the six new Veltones. Each roll of Veltone is like a huge block of marble . . . yet this material is actually more beautiful than marble because its colorings are so subtly combined.**

In addition, there are two-toned effects in Sealex Jaspé and solid colors in Sealex Battleship Linoleum. Six of the latter now come in special miniature rolls to reduce expense when only a small amount of one color is required.

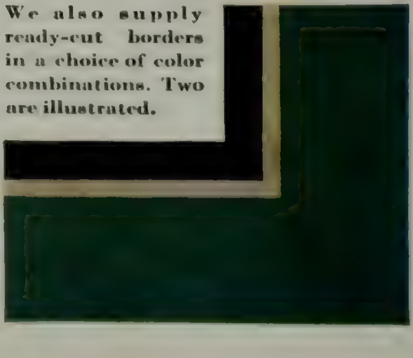
New cutting service: **The four inset designs reproduced on this page are Sealex Linsignia. We cut Linsignia at our factory and ship them to your contractor ready to lay. This insures a perfect fit. The design may be your own conception or one of our standard Linsignia patterns, in any size and color combination you specify. The charge for this service is quite moderate.**

Write our Architectural Service Department for estimates or further information.

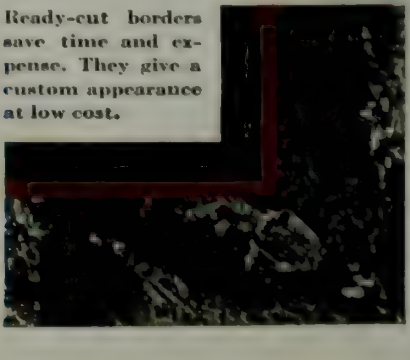
CONGOLEUM-NAIRN INC. • • KEARNY • N. J.

SEALEX LINOLEUM FLOORS

BONDED FLOORS ***are floors of Sealex Linoleum and Sealex Tile backed by a Guaranty Bond issued by U. S. Fidelity & Guaranty Co. They are installed by Authorized Contractors.***



We also supply ready-cut borders in a choice of color combinations. Two are illustrated.



Ready-cut borders save time and expense. They give a custom appearance at low cost.

To Achieve
the American Ideal

AMERICAN Steel Sheets

are the highest development in this important craft. This Company's ideal is not merely to meet competition in quality — but rather to set a standard for competition to meet. It is in this aim that the spirit of progress lives—it denotes continuous development and improvement. In producing highest standards for sheet metal today, the American ideal plans for even a higher tomorrow.

American products are supplied in Black and Galvanized Sheets, Tin and Terne Plates for all purposes. When maximum rust-resistance is important, specify for Keystone Copper Steel, the original copper steel alloy—unexcelled for Galvanized Sheets and products requiring the greatest degree of permanence and endurance Send for our *Anti-Corrosive Metal* booklet.

American Sheet and Tin Plate Company

General Offices: Frick Building, PITTSBURGH, PA.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES:

American Bridge Company
American Sheet and Tin Plate Company
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Carnegie Steel Company
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Cyclone Fence Company
Federal Shipb'ldg. & Dry Dock Co.
Illinois Steel Company
Minnesota Steel Company
National Tube Company
Oil Well Supply Company
The Lorain Steel Company
Tennessee Coal, Iron & Railroad Co.
Universal Atlas Cement Company

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif.

Export Distributors—United States Steel Products Company, 30 Church Street, New York, N. Y.

98.87% of grease removed from water at 140° Fahrenheit!

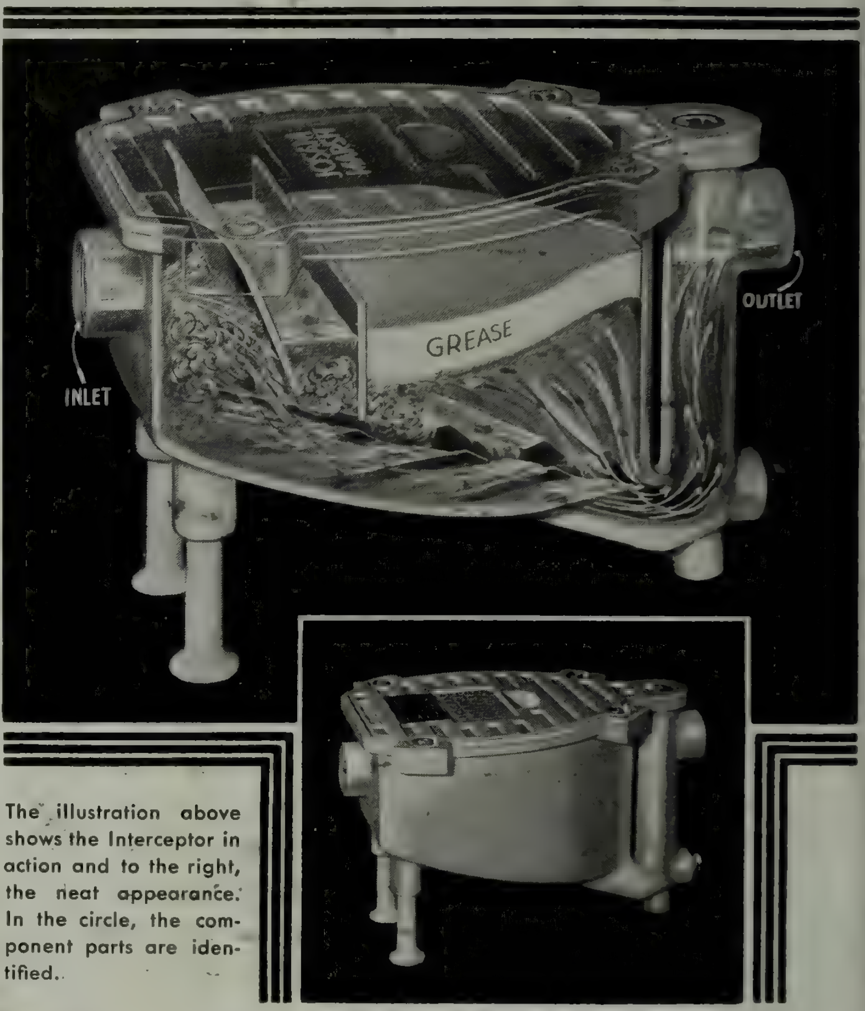
Intercepting grease from waste water at 140° Fahrenheit is not a record but the daily service that Josam-Marsh Grease Interceptors are designed to give. Because the efficient operation of Josam-Marsh Interceptors does not depend upon waste water temperatures, no cold water jacket is required. Only clean grease is retained in this type of Interceptor. Sediment and foreign matter are carried away with the waste water.

For surgical sinks and lavatories where Plaster Paris—solid or in suspension, cotton, lint, hair or other foreign matter would clog drain pipes, other types of Interceptors are available.

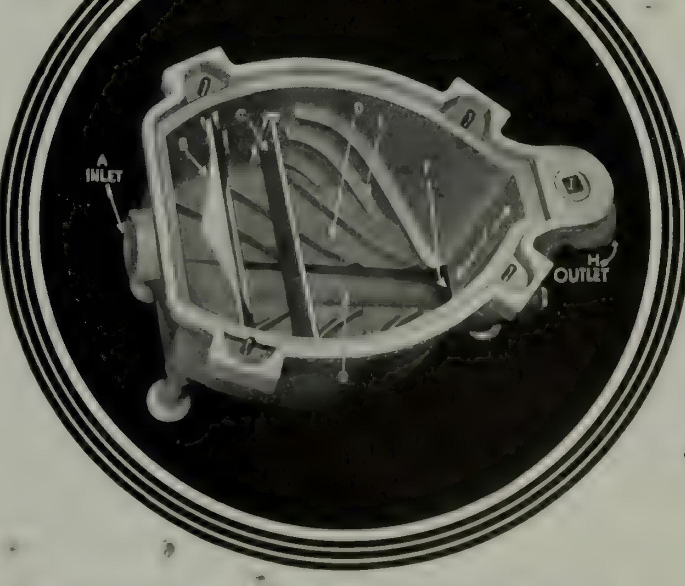
In existing buildings or if you are planning an annex, these practical sanitary devices will always eliminate the trouble and expense of clogged waste lines.

The initial cost installed is low. As there are no moving parts—nothing to wear out—a Josam-Marsh will outlive the building.

Catalog G illustrates and describes this complete line and a copy should be available in your files.



The illustration above shows the Interceptor in action and to the right, the neat appearance. In the circle, the component parts are identified.



Josam Marsh GREASE INTERCEPTOR

(a) Inlet; (b) V-Baffle; (d) Converging Bottom Ribs; (e) Converging Side Wall Ribs; (f) Outlet; (g) Channel to Outlet; (h) Outlet Pipe Connection; (i) Vent Connection and Cleanout; (j) Seal Wall Separating Outlet and Body of Interceptor.

Josam TRADE MARK REG. PRODUCTS

STANDARD OF AMERICA

JOSAM PRODUCTS ARE SOLD BY ALL PLUMBING & HEATING SUPPLY JOBBERS

SEE OUR Catalogue in SWEETS

We will welcome inquiries regarding the use and installation of the Josam Products listed below from Catalog G: Josam Drains for Floors, Roofs, Showers, Urinals, Garages and Hospitals; Josam Swimming Pool Equipment, Josam-Marsh Grease, Plaster, Dental and Surgical, Sediment and Hair Interceptors; Josam-Marsh Shock Absorbers for pipe lines; Josam Open Seat Back Water Sewer Valves; Josam Open Seat Swing Check Valves; Josam Adjustable Closet Outlet Connections and Bends, Water and Gas-Tight.

JOSAM MANUFACTURING COMPANY
4906 Euclid Building . . . Cleveland, Ohio
FACTORY: MICHIGAN CITY, INDIANA.
BRANCHES IN ALL PRINCIPAL CITIES.

THERE ARE NO SUBSTITUTES FOR JOSAM PRODUCTS

ANOTHER TIGER JOB!

The magnificent Chrysler Building, New York City. Finished with Tiger—the lime that

"Spreads like warm butter"

This imposing structure pays glowing tribute to the vision of its owners, the W. P. Chrysler Building Corporation; to the genius of its architect, William Van Alen; to the skill of its general contractor, Fred T. Ley & Co.; and to the plastering ability of Frank Morell & Co., who Tiger-finished its beautiful interior.

Whether a modest home or a giant skyscraper, good building calls for the best of lime—the famous Tiger White Rock Finish. It proclaims quality construction throughout.

●

THE KELLEY ISLAND LIME & TRANSPORT CO.
World's Largest Producer of Lime
LEADER BUILDING CLEVELAND, OHIO

The Famous TIGER FINISH

And—Tiger Mason's, Tiger Agricultural, Tiger Chemical, Tiger All-Purpose Hydrate in 10-lb. packages, and High Calcium and Magnesium Lump Limes. Also Quickslake (ground quicklime) in paper-lined jute sacks.

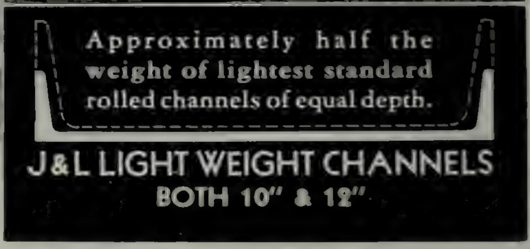
STAIRWAYS TO THE SKY . . .

. . . *with* J&L *Light Weight Channels as stair stringers . . .*

IN the relatively brief period since J & L Light Weight Channels were introduced, they have been used as stair stringers in practically every type of building. This acceptance is based on ease of fabrication, appearance of the finished job, adaptability to widely varying applications and, of course, economy. All of these advantages contributed to selection of J & L Light Weight Channels for stair stringers in the magnificent new Empire State Building and the other two buildings pictured on this page.

A few of the many different types of buildings in which J & L Light Weight Channels are in use:

Genessee Valley Trust Company Building	Rochester, N. Y.
Central Depositors Bank Building	Akron, Ohio
Walnut Hills High School	Cincinnati, Ohio
St. Francis Hospital	Columbus, Ohio
Baltimore & Ohio Produce, Fruit & Exchange Terminal	Baltimore, Md.
Manufacturers' Exchange Bldg.	Philadelphia, Pa.
Haddon Hall	Atlantic City, N. J.
Masonic Temple Building	Decatur, Ill.
Brown Shoe Company Factory	Sullivan, Ill.
Chicago Stadium	Chicago, Ill.
University of Utah	Salt Lake City, Utah
Cathedral of Learning	Pittsburgh, Pa.
Allegheny County Office Building	Pittsburgh, Pa.


Approximately half the weight of lightest standard rolled channels of equal depth.

J&L LIGHT WEIGHT CHANNELS
BOTH 10" & 12"

Above—EMPIRE STATE BUILDING, NEW YORK CITY

Architects	*Contractors*	*Fabricator of Stairs*
Shreve, Lamb & Harmon	Starrett Brothers and Eken, Inc.	C. E. Halback & Co.

Right—SOVEREIGN APARTMENTS, MILWAUKEE, WIS.

Architects	*Contractor*	*Fabricator of Stairs*
Bruce Uthus	S. M. Siesel Company	Badger Wire & Iron Works

Left—JOHNS HILL JUNIOR HIGH SCHOOL, DECATUR, ILL.

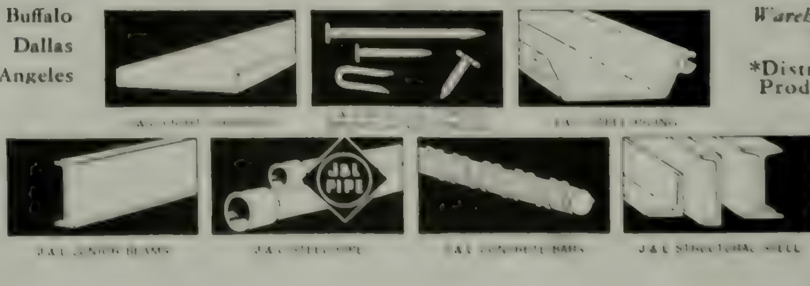
Architects	*Contractor*	*Fabricators*
Brooks, Bramel and Dague	Roy W. Christy	Gandy and Earp

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Detroit Denver Erie Los Angeles Memphis Milwaukee Minneapolis New York Philadelphia Pittsburgh St. Louis San Francisco Washington



Warehouses: Chicago Cincinnati Detroit *Memphis Pittsburgh

*Distributing Warehouse for Pipe, Wire Products, Sheets, Spikes and Bars for Concrete Reinforcement

Canadian Representatives:
JONES & LAUGHLIN STEEL PRODUCTS COMPANY
Pittsburgh, Pa., U.S.A.,
and Toronto, Ontario, Canada

Bancroft Hall, U. S. Naval Academy. Ernest Flagg Architect. Two-inch steel lath and plaster partitions used.

Neil House, Columbus, Ohio. Gustave Drach Architect.

International House, New York. Louis E. Jallade, Architect. Two-inch steel lath partitions extensively used.

Added... 25 rooms and $40,000 income ... with steel lath two-inch solid partitions

HERE is a striking example of obtaining maximum usable space in buildings where land values are exceptionally high.

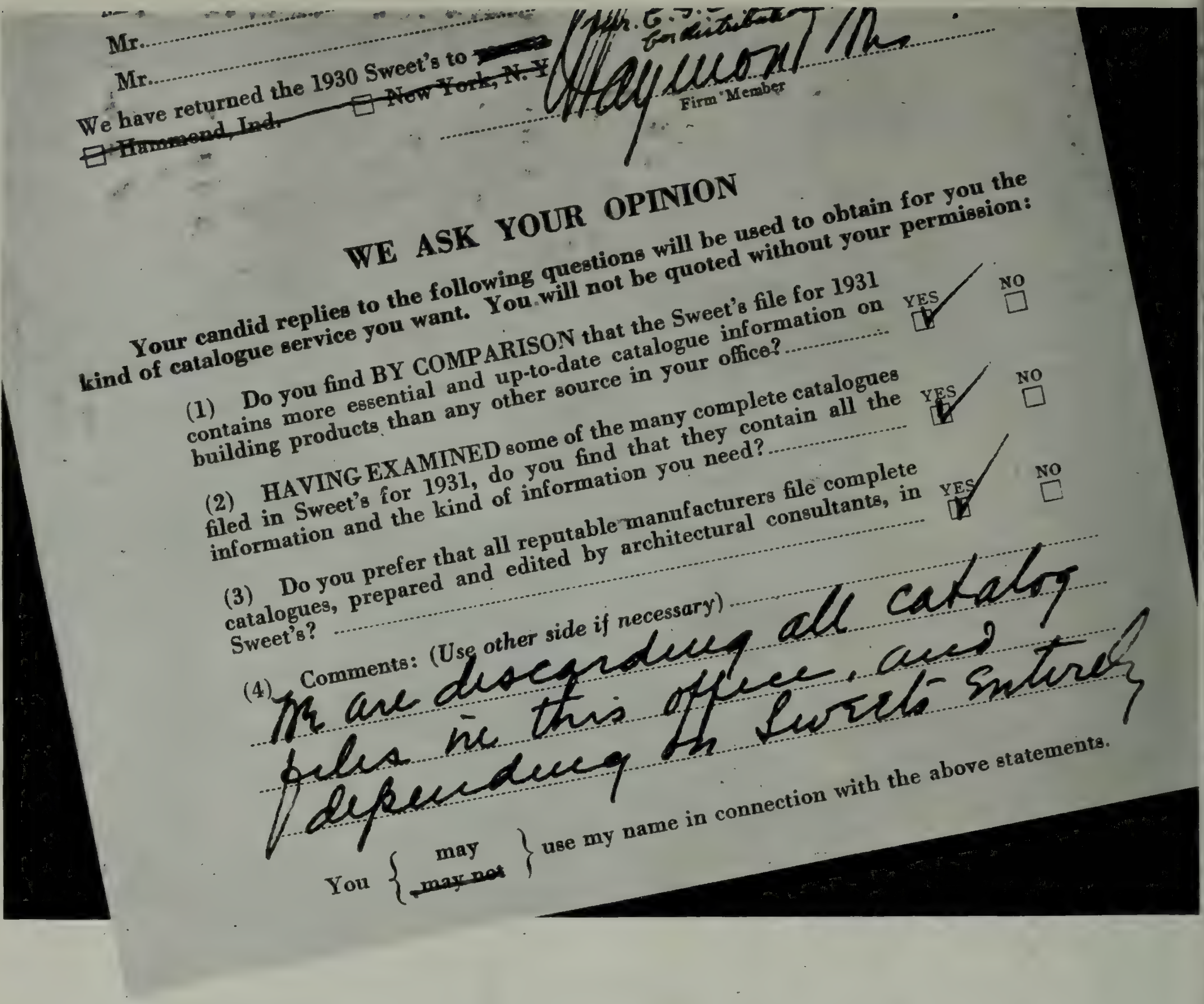
In constructing the Neil House, Columbus, Ohio, two-inch steel lath and plaster partitions were used instead of the four and one-half or five and one-half inch thick masonry type. The cumulative space savings in the partitions between rooms, around bathrooms and closets and in corridors was sufficient to add three full sized rooms on each floor. The eight and one-half floors were thus provided with twenty-five additional rooms which, with a rental value of $4.50 daily, brought in over $40,000 a year—an added income due solely to space saving steel lath partitions.

Such savings are common with this type of construction. Other desirable features such as incombustibility, sound resistance, light weight, low cost and adaptability to all types of buildings have made it increasingly popular with architects, builders and owners alike.

Complete information on steel lath two-inch solid partitions as well as any other steel building products of interest to you is yours for the asking, without obligations. Trade Research Division, National Association of Flat Rolled Steel Manufacturers, 511 Terminal Tower Building, Cleveland, Ohio.

Steel doors, stairways and trim cannot burn. They stop fire—saving lives and property.

Save Space Weight Money **with Steel Lath**



Mr.

Mr.

We have returned the 1930 Sweet's to ☐ ~~Hammond, Ind.~~ ☐ ~~New York, N. Y.~~

Haymont

Firm Member

WE ASK YOUR OPINION

Your candid replies to the following questions will be used to obtain for you the kind of catalogue service you want. You will not be quoted without your permission:

(1) Do you find BY COMPARISON that the Sweet's file for 1931 contains more essential and up-to-date catalogue information on building products than any other source in your office? YES ☑ NO ☐

(2) HAVING EXAMINED some of the many complete catalogues filed in Sweet's for 1931, do you find that they contain all the information and the kind of information you need? YES ☑ NO ☐

(3) Do you prefer that all reputable manufacturers file complete catalogues, prepared and edited by architectural consultants, in Sweet's? YES ☑ NO ☐

(4) Comments: (*Use other side if necessary*) We are discarding all catalog files in this office, and depending on Sweet's entirely

You { may ~~may not~~ } use my name in connection with the above statements.

We asked your opinion

and got it!

Architects, engineers and contractors, acknowledging receipt of Sweet's for 1931, answered three questions (see above). The 3500 received to-date line up as follows:

	YES	NO
Question No. 1	3460	21
Question No. 2	2910	144
Question No. 3	2775	99

F.W. DODGE CORPORATION

Sweet's thanks all who have registered their opinions, favorable and unfavorable, both by checking the questions and in comments of greater length.

The following are typical of hundreds received from all points of the compass:

"The Sweet's system of filing catalogues in architects' offices serves a vital need. With this, its Twenty-fifth Anniversary edition, Sweet's Architectural Catalogues can look back with the knowledge that they have done an important and a difficult job well."

Raymond M. Hood
Raymond Hood, Godley & Fouilhoux
Architects & Engineers, New York, N. Y.

"We believe that 'Sweet's' contain more information than any catalogue files we might have, and are in a more convenient form. They require the services of no file clerks and being issued annually, they are always up to date."

E. L. Kirby
Starrett & Van Vleck
Architects, New York, N. Y.

"For a great many years Sweet's Architectural Catalogues has been in constant use in our Estimating and Construction Departments. Its usefulness to a building organization would be hard to over-emphasize, presenting as it does in compact usable form, manufacturers' catalogues covering the entire building construction and architectural fields. To be without it would be a great hardship."

J. R. Kilpatrick, *Vice Pres.*
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Contractors, New York, N. Y.

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"From year to year I am eliminating separate catalogues. Your service seems to cover all I need in my practice for all types of buildings."

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"The catalogues are used many times daily by six of our employees in addition to members of firm. Your catalogues are a great asset to us, and are very highly valued."

Elmer B. Howell, Contractor
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"Sweet's is already quite indispensable, but I hope to see it wholly displace the old catalog system in time. A marvelously convenient compendium of the most up to date materials and devices for buildings."

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"I long to see the day when Sweet's Architectural Catalogues will entirely supersede our bulky and generally out of date files of manufacturers' literature."

Walter P. Marshall, Architect
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"We find it is the best point of contact between manufacturers and contractors. Separate catalogs and folder advertising not as good and convenient."

C. F. Brickell, Contractor
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"Sweet's saves us a great deal of time which would have been spent each year in revising our files, bringing them up-to-date."

Leroy G. Brackett, Architect
Boston, Massachusetts.

"Sweet's Catalogues contain more valuable information than would be obtainable in any other way by contractors, information being so well arranged that these catalogues are continuously in use."

J. F. Ellington, Contractor
Chicago, Illinois.

Many other letters offer constructive criticism and suggestions for improvement. These are being carefully studied and will be acted upon in the light of their benefit to the profession.

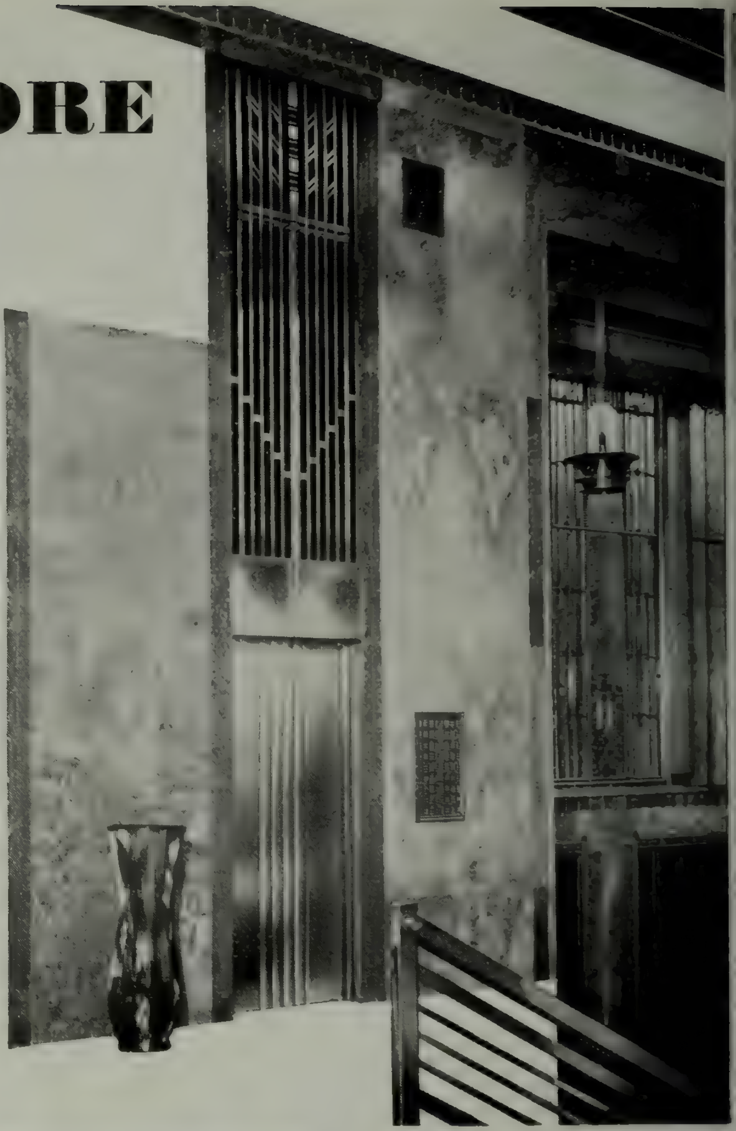
The compilation of Sweet's Architectural Catalogues for 1932 is now under way. During the coming eight months, the entire time of Sweet's staff of consulting architects, editorial, copy, sales and distribution departments (77 people) will be devoted to the job of producing a more comprehensive and complete file of manufacturers' catalogues than any which has yet appeared.

SWEET'S CATALOGUE SERVICE
F. W. DODGE CORPORATION
119 WEST 40th STREET • NEW YORK • N. Y.

NEW EATON STORE

TORONTO

used 250,000 lbs. of Monel Metal for ornamental work alone....



Monel Metal doors, grilles and railing in T. Eaton Company, Ltd., Toronto, Ont., as fabricated by ARCHITECTURAL BRONZE & IRON WORKS, Toronto. Architects: ROSS & MacDONALD, Montreal. Associate Architects: SPROATT & ROLPH, Toronto.

● The ornamental possibilities of Monel Metal... its radiant beauty and perfect harmony with modern design... have never been more strikingly revealed than in the gorgeous interior of the new T. Eaton Company store in Toronto.

With revolving doors, swing doors, grilles, stair and hand railings, show cases, elevator doors, enclosures and cab trim, switch plates and directory boards all of this lustrous, life-time Nickel alloy, the beautiful Eaton interior sounds a high note in modern store decoration and sets new standards in the use of white metal for ornamental purposes.

More than 250,000 pounds of Monel Metal were used in this installation, exclusive of the food service equipment which is also Monel Metal. This silvery, high Nickel alloy was selected after the most careful deliberation of the owners and architects covering all available white metals. Monel Metal's rich platinum color, its ease of upkeep, its immunity to rust and its resistance to corrosion... these were the principal reasons for its choice.

When planning future metal work remember that "Nickel alloys look better longer." Let us send you complete information about the many applications of Monel Metal in the metal arts.

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Constructed in 1930

SHREVE, LAMB & HARMON
Architects
H. G. BALCOM
Structural Engineer

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New York City

THE TALLEST BUILDING IN THE WORLD

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is imperative

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"R. I. W." Toxement—(INTEGRAL WATERPROOFING)—is especially adapted and recommended for waterproofing all Portland Cement construction of varied types, including bridges, viaducts, dams, piers, dry-docks, swimming pools, factories, office buildings, foundations, walls, floors, elevator and boiler pits; also molded work such as urns, balustrades, statues, benches and posts. If Concrete, Stucco or Cement Mortar is to be permanent it must be nonporous, and its permanence will be directly proportional to its porosity. "R. I. W." Toxement possesses pronounced lubricating qualities and increases remarkably the workability, plasticity and flowability of concrete and cement mortar. It promotes a more thorough and complete hydration than would ordinarily be obtained. Further, it secures plasticity with *less* mixing water.

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"R. I. W." Plastertox—(PLASTER BOND)—is a heavy, viscous boiled mastic, developed to protect the interior surface of exterior walls above grade, insulating the wall and filling all orifices, voids and cracks. It absolutely locks out dampness and provides a perfect bond to which to apply hard wall plaster. For spandrel beam waterproofing "R. I. W." Plastertox is buttered on both sides of an elastic pliable membrane—(felt or fabric)—so placed as to seal the joints back of the tile or brick around the spandrel beams. In the use of "R. I. W." Plastertox for this purpose, there is no loss of bricklayers' time, as all required materials are prepared on the job in advance of the masons.

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Why Holabird & Root Give

Palmolive Building, Chicago, awarded gold medal 1930

THE firm of Holabird & Root is known throughout the country for many modern buildings, such as the Palmolive Building, 333 North Michigan Avenue, the Chicago Daily News, the Board of Trade of Chicago and the Rand Tower, in Minneapolis.

The prominence of these many nationally known buildings, for which the Architectural League of New York recently awarded their Gold Medal on Architecture, is evidence of their high artistic design. Behind this marked ability to design striking and satisfactory buildings is a large and competent force of men, many of them with long experience in the various related fields of mechanical, electrical and structural engineering, ensuring the entire practicability and commercial success of their structures.

The youthful personnel brings clarity of mind and aids in the solution of new problems peculiar to modern industrial plants, utility corporation buildings, modern court houses, university buildings and the like, which form a large proportion of the varied and extensive practice of Holabird & Root.

Mr. John A. Holabird, the senior partner of the firm, is the second of the same family to practice architecture in Chicago. His father organized in 1882 the firm of Holabird & Roche. This firm built the Tacoma building in Chicago, the first skyscraper of steel skeleton construction in the world, and many other notable buildings.

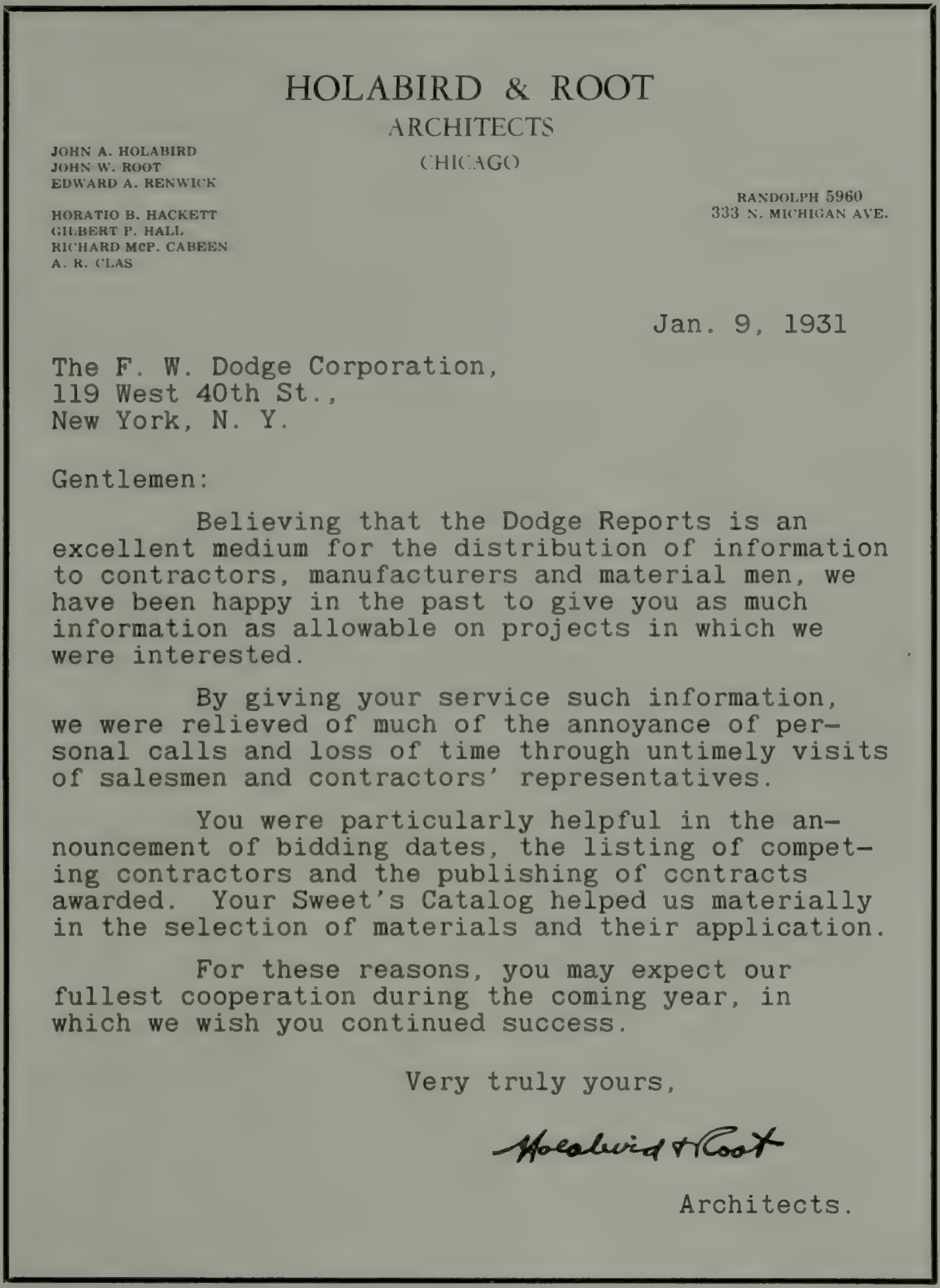
Chicago Daily News Building, awarded gold medal Chicago Chapter A.I.A. 1930

Mr. John W. Root is also a member of the second generation of architects. His father, of the same name, is remembered for his work on the Monadnock, the Masonic Temple and the World's Fair of Chicago.

The modern tradition is thus carried on by the present firm. The forms have changed and will change times innumerable, but the same adventurous spirit will attack problems and meet them with a continued success that the past warrants.

News to DODGE REPORTS

333 North Michigan Avenue, Chicago—(in which are the offices of Holabird & Root)—awarded gold medal 1927



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Jan. 9, 1931

The F. W. Dodge Corporation,
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Gentlemen:

Believing that the Dodge Reports is an excellent medium for the distribution of information to contractors, manufacturers and material men, we have been happy in the past to give you as much information as allowable on projects in which we were interested.

By giving your service such information, we were relieved of much of the annoyance of personal calls and loss of time through untimely visits of salesmen and contractors' representatives.

You were particularly helpful in the announcement of bidding dates, the listing of competing contractors and the publishing of contracts awarded. Your Sweet's Catalog helped us materially in the selection of materials and their application.

For these reasons, you may expect our fullest cooperation during the coming year, in which we wish you continued success.

Very truly yours,

Holabird & Root

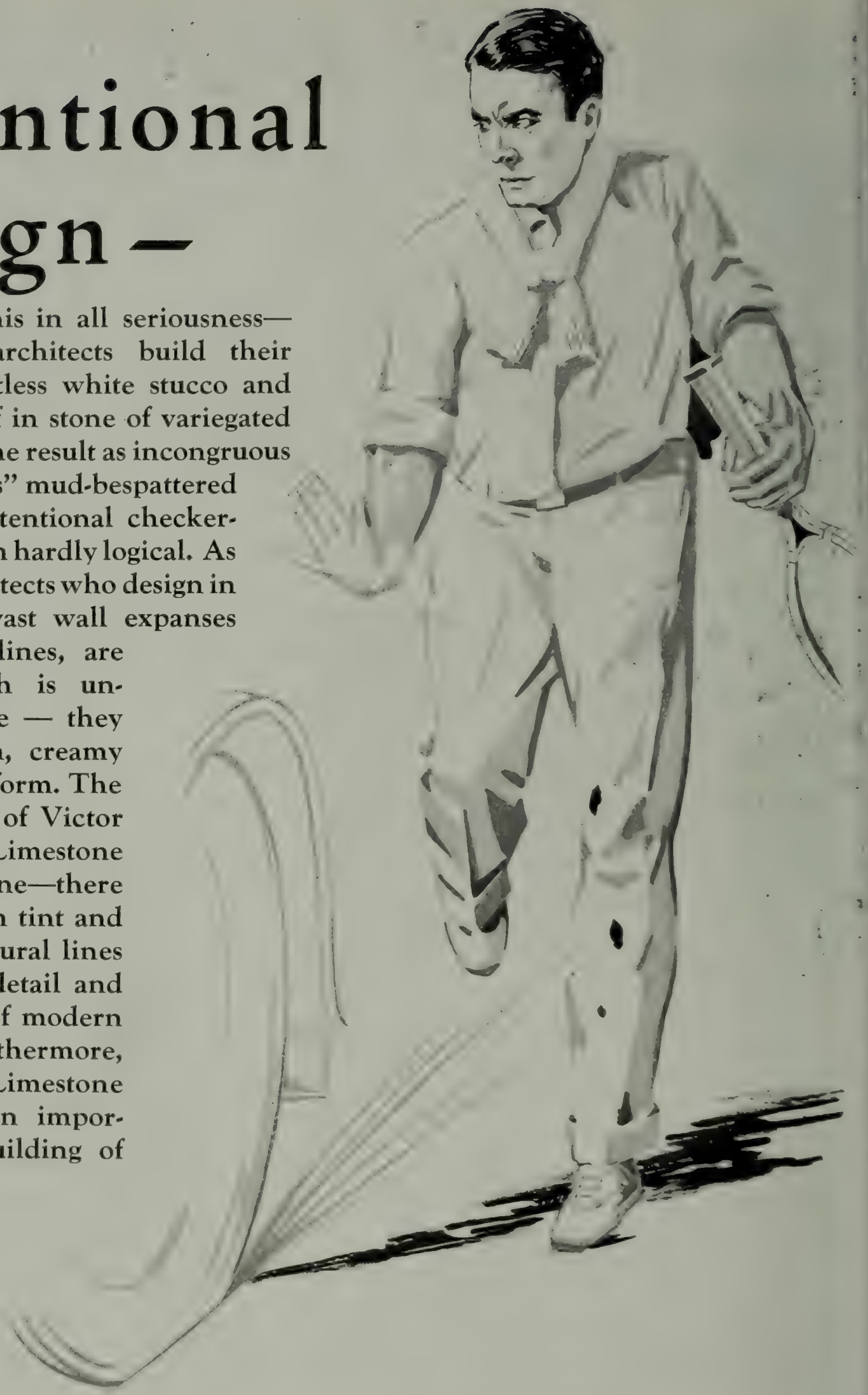
Architects.

DODGE REPORTS

Issued Daily By F. W. DODGE CORPORATION—Coordinated Publications and Services for Building Sales in the Building Field

F.W. DODGE
CORPORATION

Unintentional design –



WHY—and we ask this in all seriousness—WHY do some architects build their miniature models in spotless white stucco and then execute the job itself in stone of variegated tint and tone? And isn't the result as incongruous as a pair of spotless "whites" mud-bespattered by a passing auto? Unintentional checkerboard effects in design seem hardly logical. As a matter of fact, most architects who design in the modern style with vast wall expanses and sweeping vertical lines, are not using a stone which is uneven in tint and tone — they specify one whose warm, creamy lightness is absolutely uniform. The greatest recommendation of Victor Select and Standard Buff Limestone is its uniform, creamy tone—there are no spotty variations in tint and color to camouflage structural lines and offsets, kill carving detail and reduce the effectiveness of modern architectural design. Furthermore, the supply of Victor Buff Limestone is virtually unlimited—an important point where the building of today will tomorrow be surrounded by others that must necessarily be in harmony with it.

Our Catalogue is filed in Sweet's for 1931, Vol. A, page 618.

VICTOR OOLITIC STONE CO.

Bloomington, Indiana

SUPPLYING THE *Breath of Life*

Life Sciences Bldg., Univ. of California, Berkeley. *Architect*: G. W. Kelham, San Francisco. *Mech. Engrs.*: Hunter & Hudson, San Francisco. *Structural Engrs.*: H. J. Brunnier, San Francisco. *Builders*: Dinwiddie Const. Co., San Francisco. *Heating Contrs.*, Latourrette-Fical Co., Sacramento, Oakland.

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Sturtevant Unit Heater-Ventilators are adaptable to an endless variety of installations in schools, churches, institutions, office buildings, etc. You will be interested in our Catalog 361. Our nearest office will send you one...for the asking.

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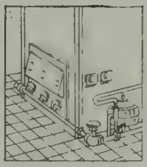

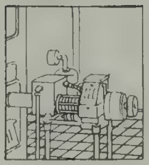

or oil for heat what about Waste Disposal?

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THE use of modern fuels in heating has given rise to a very definite problem in the disposal of waste and rubbish. Oil- or gas-fired heating plants are obviously out of the question for the destruction of wrappings, wilted flowers, sweepings and other refuse; it is dangerous to accumulate them in the basement, and ordinances—in most cities—prevent burning them out-of-doors.

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Send for A. I. A. Folder or see our Catalog in Sweet's, pages C-4526-33

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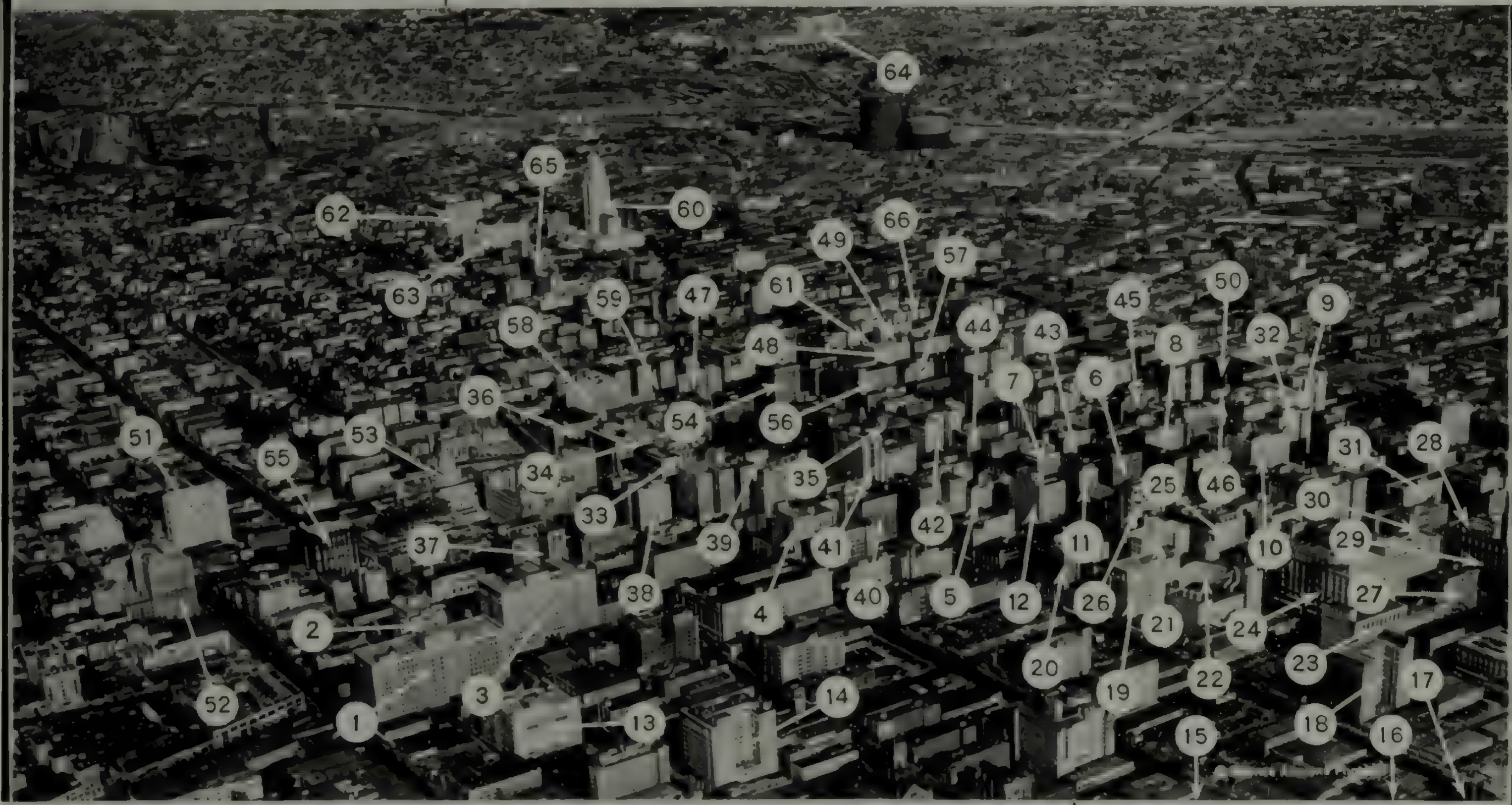

Airplane photo of Los Angeles' business section.

THE large number of buildings shown, which are served by Jennings Pumps, is a clear indication of the reputation for good performance which these trustworthy pumps have earned.

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41. Detweiler Building
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43. Desmond's Store
44. Gumbiner Theatre
45. California Bank Bldg.
46. Banks-Huntley Building
47. Peoples National Bank
48. Security First National Bank
49. Title & Trust Bldg.
50. Pacific Electric Club
51. Architects Building
52. Jonathon Club
53. L. A. Central Library
54. Pershing Square Bldg.
55. Richfield Oil Building
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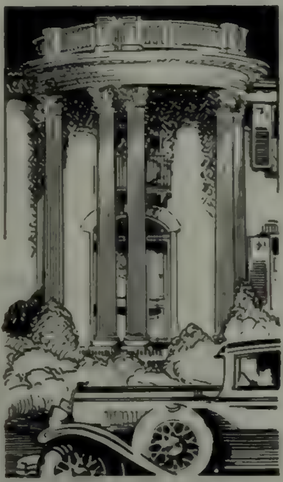

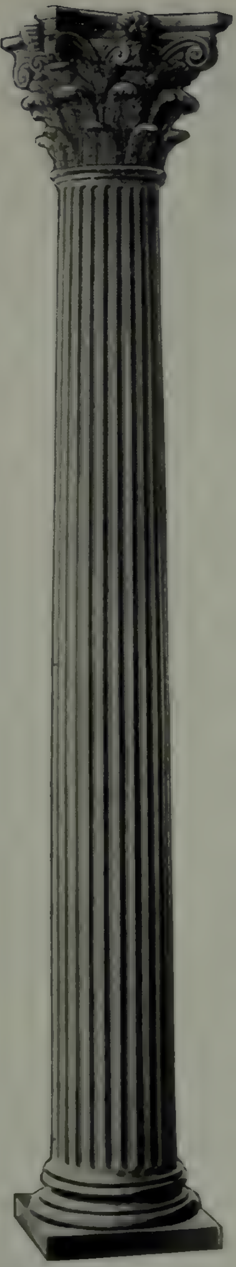

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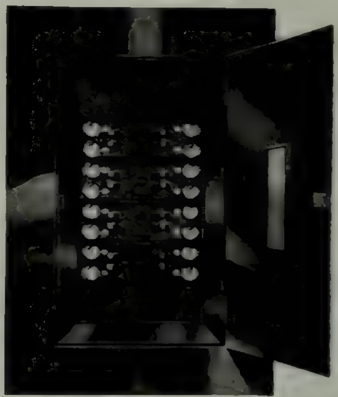

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C. B. Rutledge,
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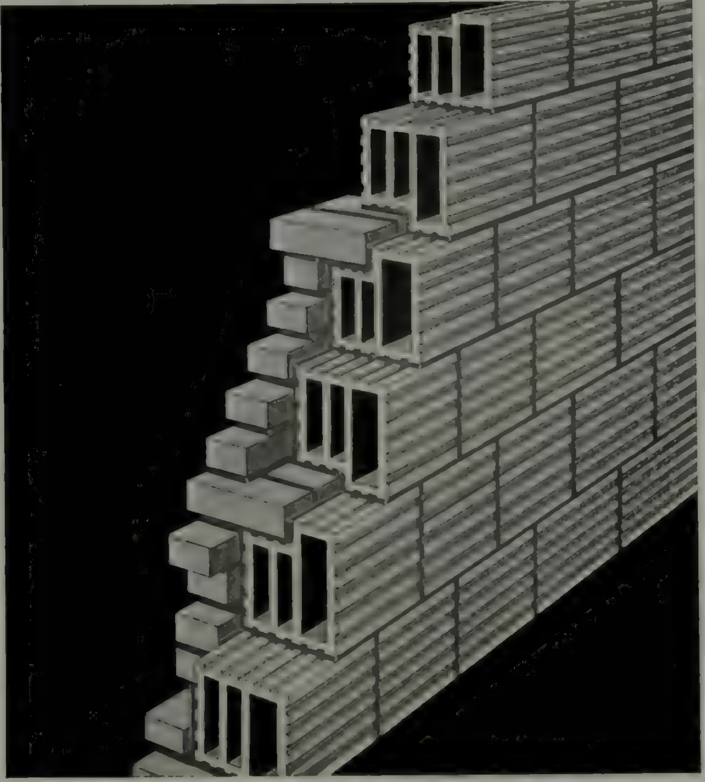
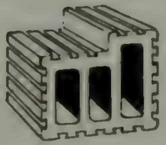
THE PRESENT DOLLAR MEASURES THE COST - THE FUTURE DOLLAR THE PROFIT

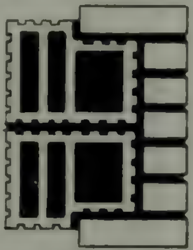


THE FACING CAN BE, NOT JUST THE *skin* OF A BUILDING, BUT PART OF ITS *bones* THROUGH *Natco* UNIBACKER TILE

Natco Unibacker is a patented backing unit for brick faced walls.

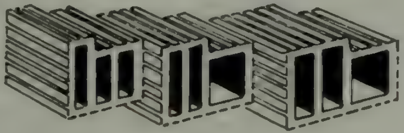


Every six brick courses it establishes a mechanical bond, so intimate and permanent that the facing becomes, not a mere veneer but an integral and load bearing part of the wall.



Unibacker is easily and quickly laid, only the one unit is needed. Each unit is equivalent to from eight to twelve brick

and effects pronounced savings in labor, mortar and time. Varying widths



provide for varying wall thicknesses. Natco Unibacker, time-tried and proven, merits careful consideration wherever savings and service are prime considerations.

For load bearing, closure or curtain walls, Natco Unibacker has repeatedly demonstrated its outstanding advantages in buildings large and small throughout the country. Send for a catalogue or turn to Sweet's (A-677-730) for full details.

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The New Use for Natco Clay Conduit—to house cables in masonry walls.

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Now there is a brand of Fretz-Moon Conduit for every combination of conditions. ENAMELITE, black enameled inside and outside—GALVITE, enameled inside and electro-galvanized outside—HOT DIPPED GALVITE, heavily galvanized inside and outside with a heavy coat of baked-on enamel over the inside galvanizing. These three brands provide sufficient latitude to cover all requirements.

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Most architects now specify the quiet T/N

T/N fits smartly into modern bathroom design. Built in one piece of twice-fired vitreous china, ugly wall tank is eliminated. T/N fits corners, under windows and stairs.

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colorful
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The new CAREYSTONE Shingle combines colorful permanency with low cost. Made of Asbestos and Portland Cement, its life is not limited by rust or decay, and it is as fireproof as stone.

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CAREYSTONE Shingles add greatly to the value of homes which they protect, but because of a new, exclusive CAREY manufacturing process, they are sold for less than roofs which do not approach them in appearance and durability. Distributors in all principal centers can give prompt service.

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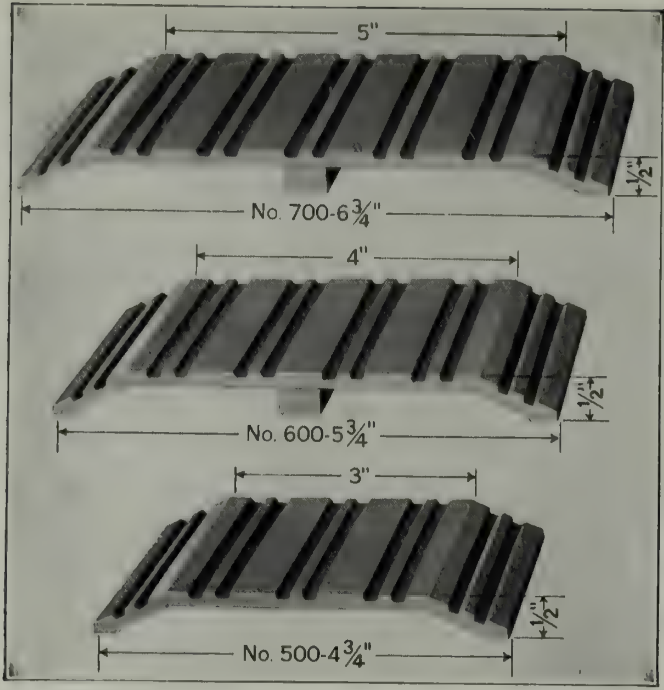

Saving from the Start . . .

Two economies arise from the specification of Rixson Thresholds. At the very beginning of the job there is an initial saving in installation labor by using Rixson Thresholds furnished ready-drilled for Rixson Floor Checks. Thereafter the extruded design in combination with the hard metals used defies depreciation. This endurance insures against early replacement costs or any maintenance expense. In addition, of course, there is the value of a handsome clean-cut appearance.

RIXSON
Thresholds of Architectural Bronze or Aluminum

OUR CATALOGUE IS FILED IN SWEET'S

Sufficient details for the specification of Rixson Thresholds are in Sweet's on page 3575.

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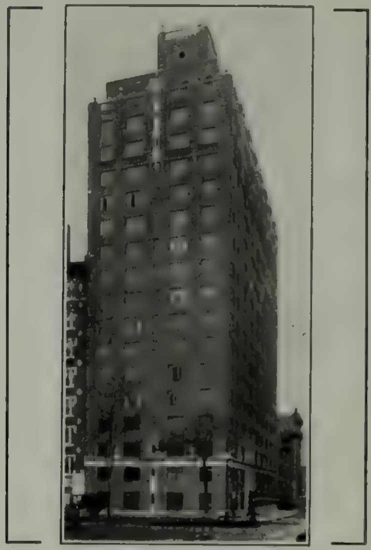

HOLLY CHAMBERS APARTMENT HOTEL

C. F. Winkelman, Architect

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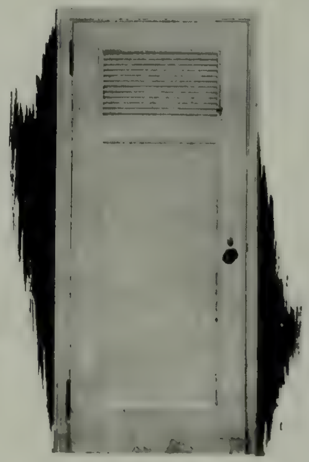
HOLLY CHAMBERS APARTMENT HOTEL
NEW YORK CITY EQUIPPED WITH

225 PANELOUVRES



TYPICAL BED ROOM DOOR

This 16-story Apartment Hotel, located in one of the most exclusive residential sections of New York City, is one of the many better class of Apartment Hotels that have equipped all corridor bedroom doors with PANELOUVRE, thus lowering construction costs and yet giving their tenants adequate, controllable air circulation with complete privacy.

Louvred Door Ventilation is the accepted modern method of supplying changes of air—practically and economically.

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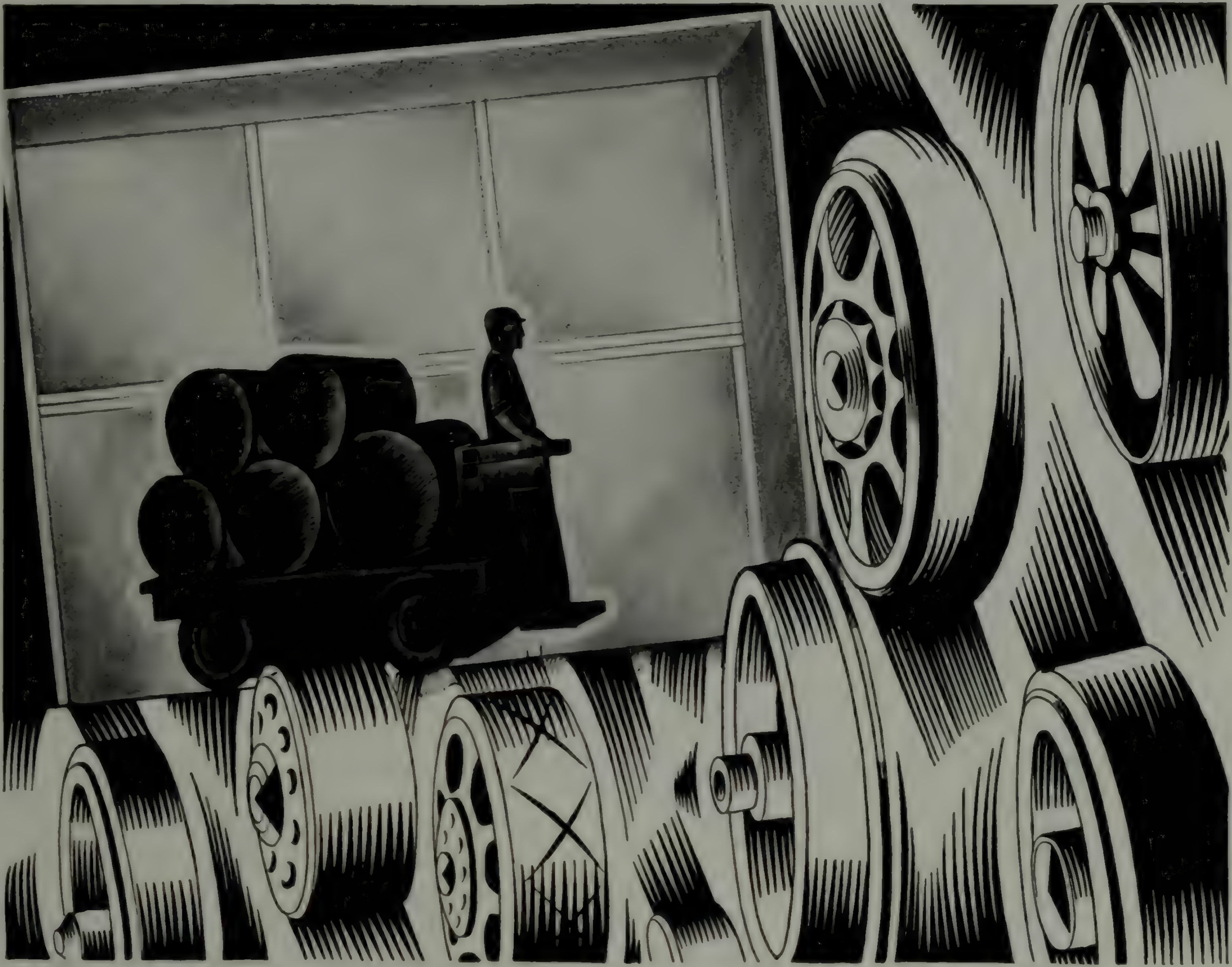

wheels...symbol of traffic...movement...carriers of men and produce. Wheels of industry traverse the continent, others the route confined within the walls of industrial plants. The wheels of interior traffic must travel vertically as well as horizontally... up and down a shaftway as well as across a floor. At this crucial cross-road... the point of entrance and exit between the floor and elevator car... Peelle Doors smooth the path of countless wheels, make possible their swift change to vertical progress. They safeguard against accident and spread of fire... act both as bridge and wall. Motorized... opening and closing at the touch of a button... Peelle Doors speed the movement of raw material and finished product and lower plant distribution costs. Write for catalog, or consult our engineers.

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DOORS

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Boston, Chicago, Cleveland, Philadelphia, Atlanta and 30 other cities
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A Heatilator Fireplace

By J. FLOYD YEWELL

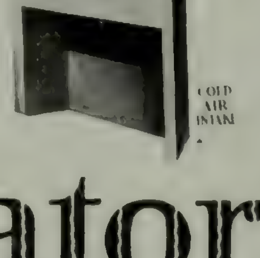
The sketch above is one of a series in which eminent architects are showing fireplaces that have the double charm of external beauty and internal utility—gained at very little extra cost by the use of a Heatilator Fireplace Unit.

Mr. Yewell says:

"It happens that the house I have designed this fireplace for will be chiefly used in summertime, when the boiler in the basement will not be running. The finished fireplace will be just like my sketch, except that the outlet grilles for warm air will be located in bedrooms on the second floor. The extra heat that comes from the Heatilator will be especially welcome there.

"I think the Heatilator should be used wherever fireplaces are built. It assures smokeless operation and a great deal of extra heat that is ordinarily wasted. It adds very little to the actual cost because it includes parts that are needed for ordinary construction. Anyway, as the fireplace is the center of home life, enough money should go into the building of it to have it really fine."

The use of a Heatilator rarely adds more than $15-$25 to the cost of an ordinary fireplace and it absolutely assures proper construction, good draft, freedom from smoke, and double heat from same fuel. Extensively advertised in national magazines. Heatilator fireplaces are looked for by people who buy or rent. To be strictly down to date, every house and apartment needs Heatilator-fireplace construction. Particulars on request. The Heatilator Company, 613 East Brighton Avenue, Syracuse, N. Y.



Heatilator

Fireplace Unit

Excellent Proportions

Make These Fountains Strikingly Beautiful

ILLUSTRATED is a new Century Fountain. It is a splendid expression of the enhancing beauty of excellent proportion. In design and size it is particularly adapted to large, spacious interiors. For Auditoriums, Libraries and Museums its distinguished appearance is matchless. Like all Century Fountains it is available in Black, White or Color. It is equipped with the Century Automatic Stream Control that has scored a National success.

These Fountains are permanently automatic! The unique Century Invention maintains, regardless of fluctuating water pressure, a normal, wholesome drinking stream. Sudden splashing gushes of water have been definitely eliminated. The unsanitary, inconvenient trickle is unknown. Each turn of the handle produces a clear, full stream. A clean wholesome drink! The Century Invention does not waste a single drop of water to control water pressures.

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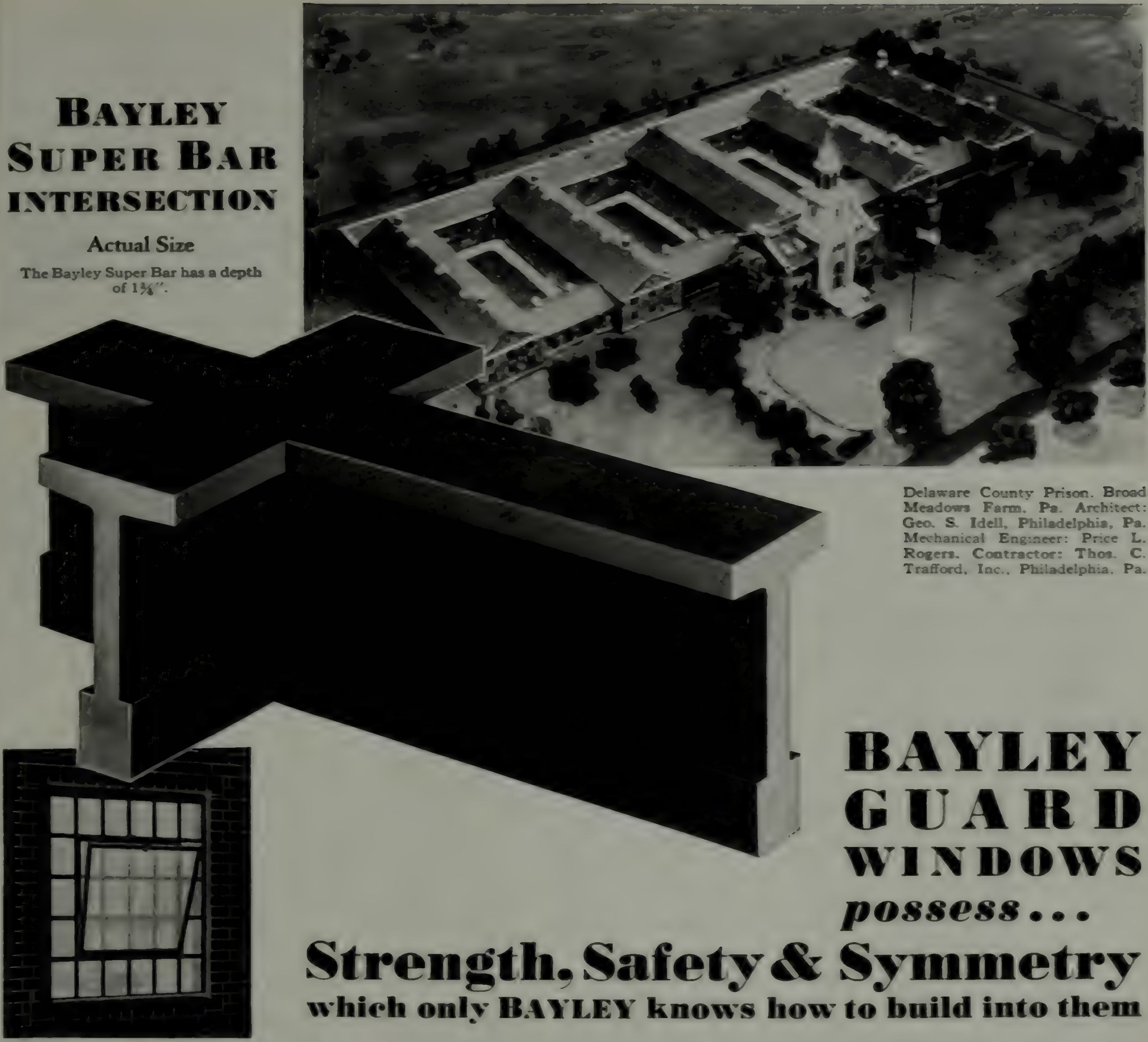
Century SANITARY DRINKING Fountains

BAYLEY SUPER BAR INTERSECTION

Actual Size

The Bayley Super Bar has a depth of 1⅜″.



Delaware County Prison, Broad Meadows Farm, Pa. Architect: Geo. S. Idell, Philadelphia, Pa. Mechanical Engineer: Price L. Rogers. Contractor: Thos. C. Trafford, Inc., Philadelphia, Pa.

Inside view of a Bayley Guard Window.

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Strength, Safety & Symmetry

which only BAYLEY knows how to build into them

THE proper balancing and blending of correct design, high grade materials and good workmanship, fifty-year-old traditions with Bayley, make Bayley Guard Windows outstanding in sheer strength, adequate safety and attractive symmetry for penal institutions of all kinds.

Protected ventilators give ample ventilation. Bars are continuous through ventilator openings. Metal screens built integrally by Bayley give still further protection.

The Bayley Guard Window is the result of research in cooperation with prison architects and officials and exactly meets modern prison requirements. Illustrated literature on request or a Bayley representative will call. The William Bayley Company, Springfield, Ohio.

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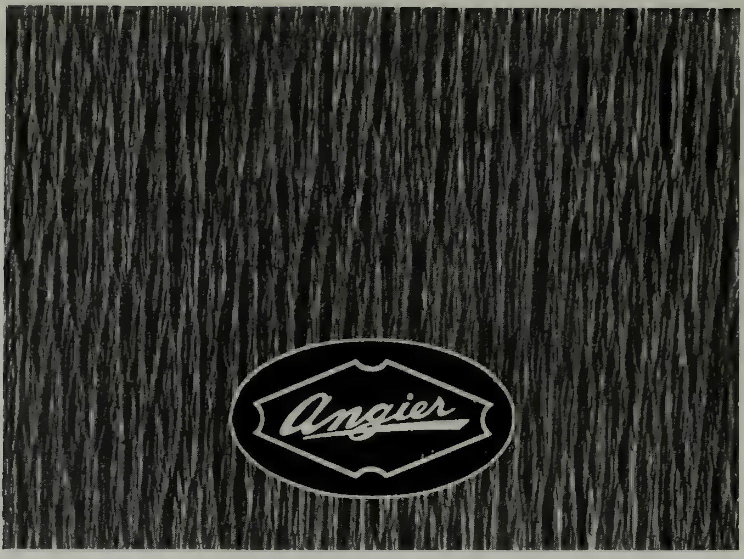

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MANY ARCHITECTS SPECIFY BROWNSKIN EXCLUSIVELY—BECAUSE THIS REMARKABLE PAPER EMBODIES *Three Essential Features—found only in BROWNSKIN*

These three exclusive features are
RESILIENCE—"The Factor of Safety"
IMPREGNATION and PLIABILITY

RESILIENCE the "Factor of Safety" permits Brownskin to stretch and conform to building strains without breaking or dragging from the nails. Non-resilient papers, nailed taut between walls, cannot stretch; they continuously split and tear, permit the penetration of water, moisture, wind, dust, and vermin, and are rendered valueless in a short time.

IMPREGNATION: No water or moisture can penetrate even the outer surfaces of Brownskin because they are impregnated—water-repelling.

PLIABILITY: Brownskin is as good as any insulating quilt—can be tucked into corners, wrapped around sharp edges or bent and folded without breaking—yet it is extremely tough and may be handled with impunity.

The next time you are specifying building paper, just remember that only BROWNSKIN includes these three extra qualities outside of its regular insulating and waterproofing value—and Specify Brownskin only—for there is No "Or Equal" for this unusual paper.

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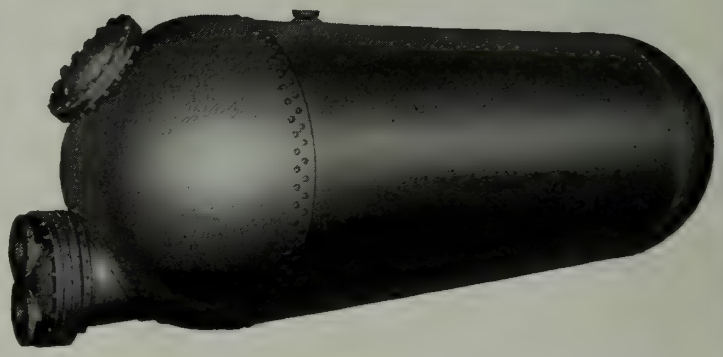
FRAMINGHAM, MASSACHUSETTS

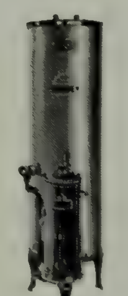
This will interest EVERY PURCHASER of Hot Water Boilers!



THE fact that copper is the ideal metal for hot water boilers is accepted by every one. It's almost entire freedom from corrosion under all conditions of water supply gives it a life far exceeding that of the ferrous metals. Even at the normal differential in price between copper and iron or steel, copper boilers are much cheaper in the long run due to their longer life and lower upkeep. Today, however, the differential in price between copper and steel or galvanized iron is so much less than normal that the purchaser is short-sighted indeed who neglects this exceptional opportunity to save money by specifying the superior copper boilers for new work or replacements.

The Dahlquist Manufacturing Company confines its entire hot water boiler production to copper and manufactures units in this metal from the smallest range boiler to the largest industrial tanks as illustrated above.

SUPER-AQUATHERM
Gas Under-Fire



AUTOMATIC GAS UNIT
With Side Arm

The Dahlquist Company has introduced and patented many exclusive technical improvements which, without extra cost to the user, have greatly increased the general efficiency of the boilers. The famous Dahlquist Aquatherm and the new Turbo-Aquatherm can be had only in Dahlquist copper boilers and full information will be gladly sent to those interested.

Dahlquist Mfg. Co.

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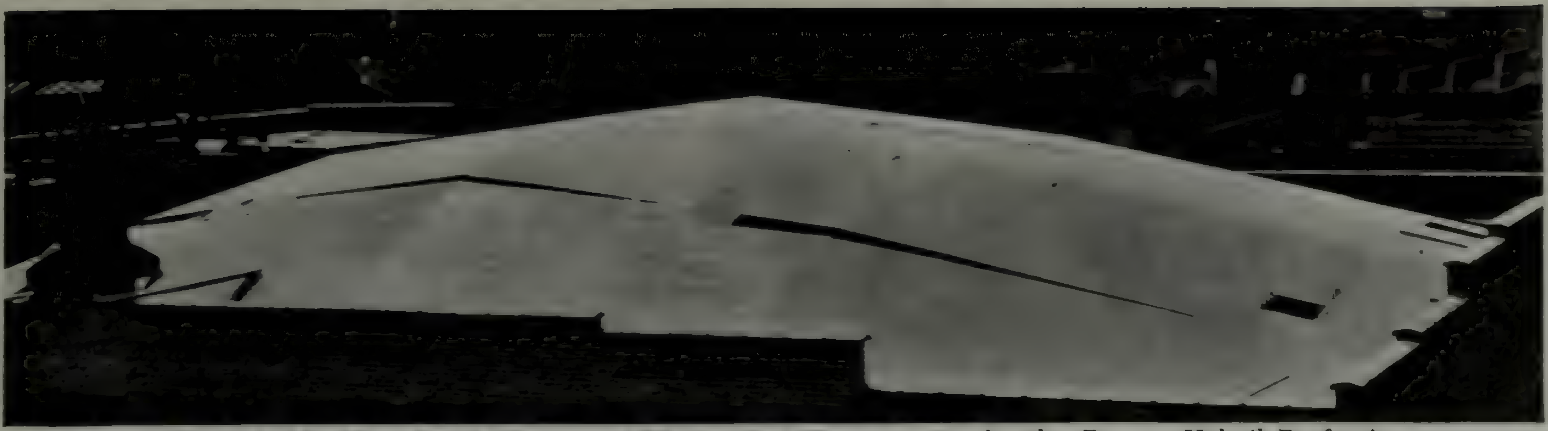


This "whaleback" roof on the Paramount Theatre, Fort Wayne, equipped with a Fenestra Holorib Roof unit.
Architect: A. M. Strauss. Contractor: Max Irmscher & Sons.

A STEEL-DECKED "WHALEBACK"

18-Point Holorib Roof Deck

1 A copper bearing steel roof deck, combined with sufficient insulation to prevent condensation.

2 A long-lived roof, requiring a minimum of maintenance.

3 Its light weight reduces the requirements of the structural steel—(one square foot of Holorib weighs approximately 5 lbs., including insulation and water proofing.)

4 Carries required loads over wide purlin spacing with ample factors of safety.

5 Makes a firm, smooth and inherently dry mopping surface for the application of insulation and roofing felts. The affinity of its component parts gives it a much longer life than other roofs.

6 Quickly laid. Speeds the completion of the building.

7 May be laid in any weather men can work—nothing to pour—nothing to freeze—nothing to dry out.

8 Applicable to flat, pitched, saw-tooth, monitor, bowstring or curved surfaces.

9 Unaffected by atmospheric changes. Expansion and contraction are negligible.

10 Saves winter fuel. Provides cooler interiors in warm weather.

11 Saves insurance. Takes a fire-proof rating when used over incombustible contents.

12 Telescoping end laps made over the purlins form tight interlocking joints.

13 Triangular reinforcing ribs running longitudinally in the sheet form a continuous beam that rests directly on the purlins.

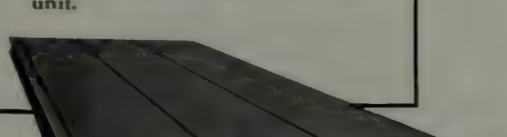
14 May be welded in place forming a rigid yet self-adjusting foundation for insulation and waterproofing.

15 Lower in cost than any other types of fire-resistive roof of the same insulating efficiency.

16 Provides attractive ceilings. It is not a dust collector.

17 May be used as a highly satisfactory floor with or without concrete.

18 Fenestra Sanacoustic Holorib provides an economical sound absorbing ceiling and roof in one unit.



Note the strong triangular ribs.

Light weight, flexible, but exceptionally strong, Fenestra Holorib makes an ideal deck for "whalebacks" and other roofs, irregularly curved.

Such a foundation, covered with insulation and built-up roofing is particularly suitable for theatres, such as this Paramount at Fort Wayne, Indiana.

15,700 square feet of 20-gauge Fenestra Holorib used.

Fenestra Holorib sheets are formed with triangular ribs, strong to withstand wind pressure and snow loads. Yet, they are flexible enough to conform to unusual roof design without precurving at the factory. We have recently perfected Sanacoustic Holorib which may be used to form, in one unit, an economic, sound-absorbing ceiling and roof.

Note 18 Fenestra Holorib advantages in the list opposite, and before you buy a steel deck, check all the facts regarding design and load-carrying capacity.

Fenestra Holorib is backed by Detroit Steel Products Co., oldest and largest steel window maker in America. Free engineering and designing service is available from the nearest Holorib or Fenestra representative. Look under "Fenestra" in your telephone book.

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IS EXPENSIVE . . .

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In modern living, noise is a destructive waster of man-power. Architects work side by side with scientists to develop means of guarding the modern worker from jarring, jolting, unnecessary sound. Man must fortify himself against noise; complete door control is the most important weapon in this defense.

The ILCO-BLOUNT Door Check offers the most efficient and sturdy method of door control—it not only quickly, easily and surely closes the door, but checks it in any way desired. It operates with the same thoroughness on the fortieth floor of a skyscraper as at street level, is not affected by varying temperature, moisture or draught conditions, and its cost is amazingly reasonable.

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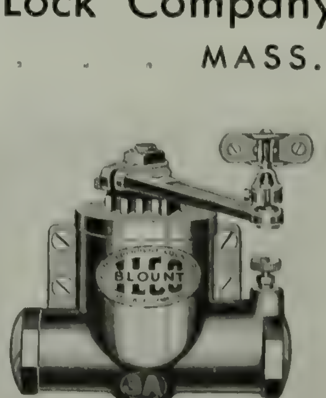
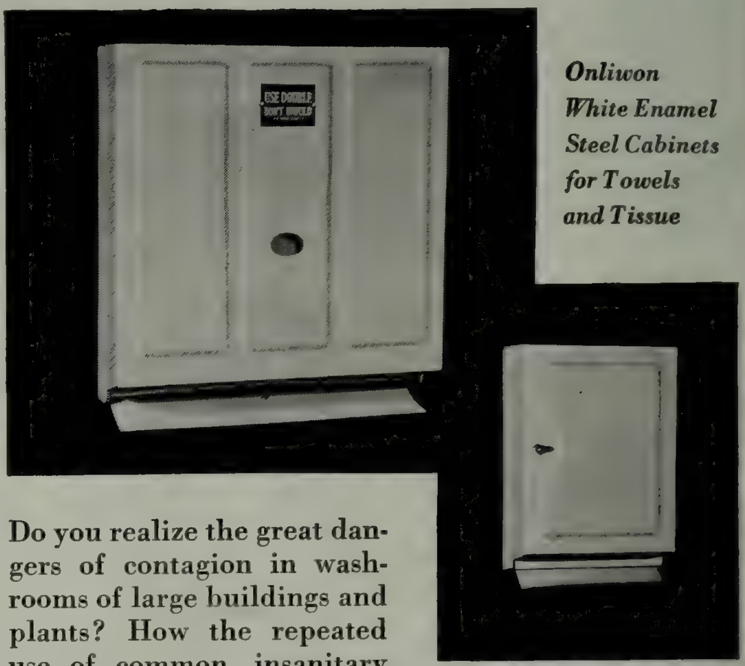


SAFEGUARD • HEALTH



Onliwon White Enamel Steel Cabinets for Towels and Tissue

Do you realize the great dangers of contagion in washrooms of large buildings and plants? How the repeated use of common, insanitary cloth towels and ordinary, harsh toilet paper will spread diseases and infections? You should—because you are responsible for the specifications of buildings which will safeguard the health of the occupants.

You can assure the use of a neat, sanitary towel and tissue service for washrooms in the buildings you design. Specify the installation of cabinets for *Onliwon Paper Towels and Toilet Tissue.* Onliwon Service means fresh, safe towels and pure, non-irritating toilet tissue protected from dust, dirt and handling by Onliwon Cabinets. Onliwon Service passes every hygienic test.

Onliwon Paper Towels are economical as well as sanitary. For, besides being absolutely safe, they are double-folded. This feature alone gives them double strength and double absorbency. Much larger — 10% to 58% more surface area than any other paper towel. It takes only one Onliwon Towel to completely dry the hands.

Onliwon Cabinets, too, feature economy as well as cleanliness. They will not release more than one towel or two sheets of toilet tissue at a time. They avoid waste and theft. For further information on Onliwon Cabinets consult page D-5092 of Sweet's Architectural Catalogue or write to the A. P. W. Paper Co., Albany, N. Y.

● A. P. W. is also the largest manufacturer of single-fold towels as well as the oldest manufacturer of roll toilet tissues.

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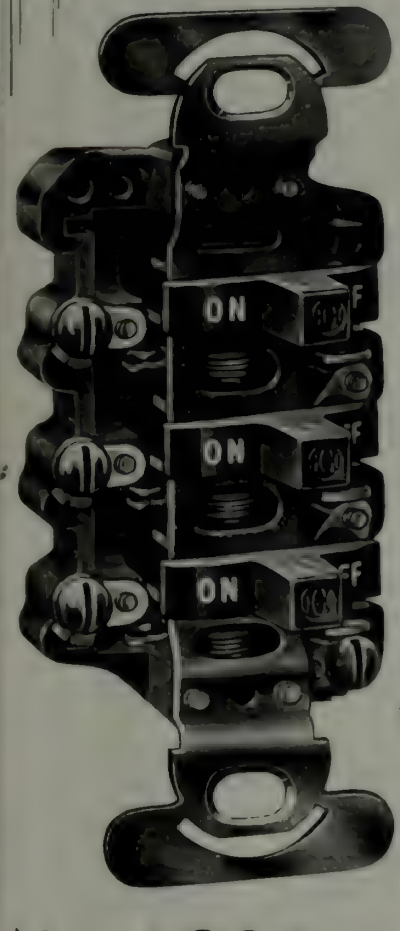
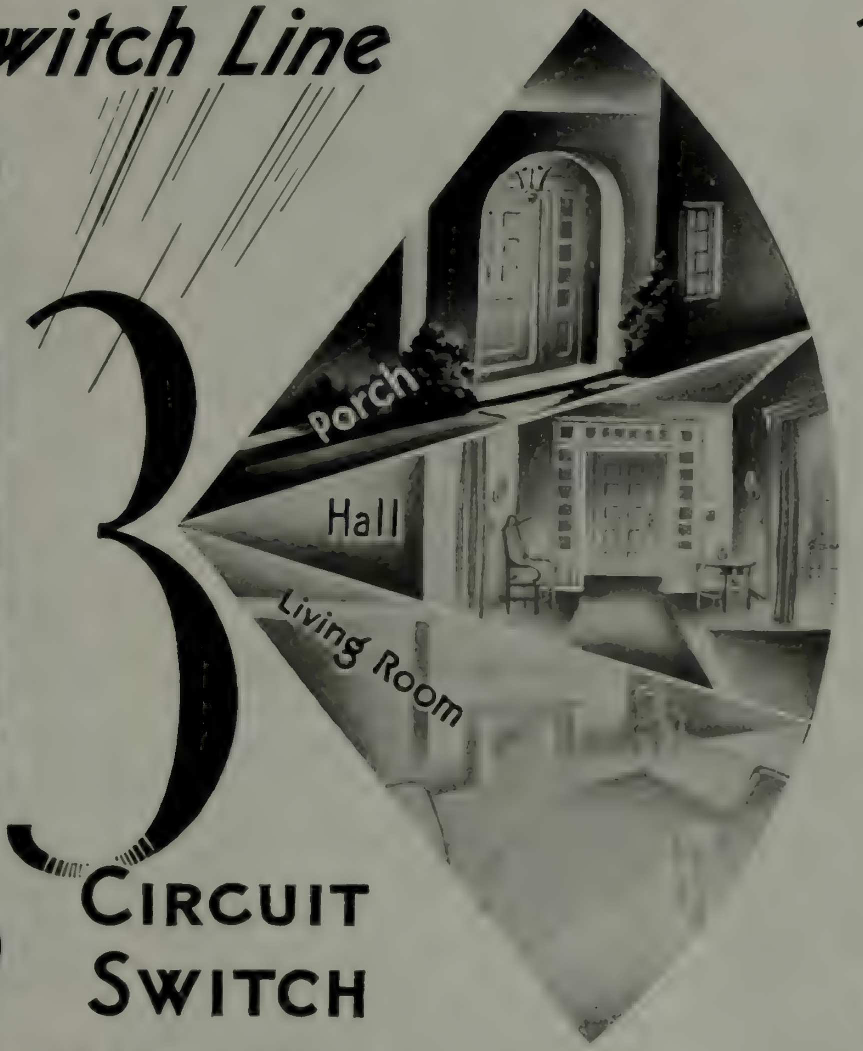
Pioneers for Cleanliness Since 1877.

Most Complete 1, 2 and 3-Circuit UNIFIED Switch Line

H&H TUMBOLIER





CIRCUIT SWITCH

No. 6890 TUMBOLIER

NEW BAKELITE-BASE SWITCH to control one, two or three circuits through a *single-gang* plate handily located. Instead of two or three switches separately placed or grouped in a multi-gang plate, the architect can point to this UNIFIED switch; neater, more stylish, inconspicuous. *Example:* porch, hall and living room lights are controlled by 3-lever Tumbolier Switch No. 6890 illustrated above. Two rooms—*any* two lighting circuits—are worked with 2-lever Tumbolier No. 6899. A 1-lever Tumbolier No. 6815 completes the line and harmony of effect where a single switch should be separately placed for convenience. All numbers furnished with *locking-feature,* if specified by adding "L" to Catalog number. Regular and lock switches take same *standard plate;* brown BAKELITE to match switch. ★ Write for Catalog data-sheet for full list of circuit combinations. And ask for Catalog of complete Wiring Device line.

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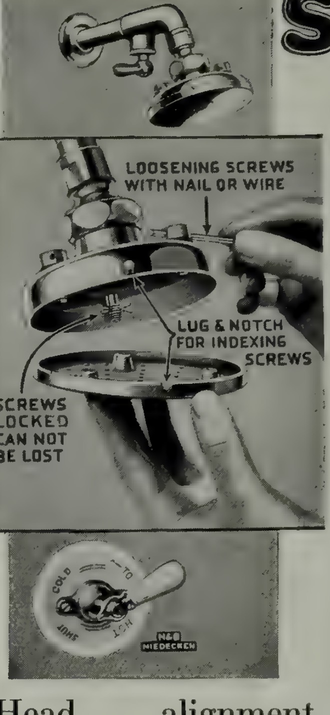
HARTFORD, CONN. MAKERS OF ELECTRIC SWITCHES SINCE 1890

NIEDECKEN SHOWERS

TRADEMARK REG. U. S. PAT. OFFICE


LOOSENING SCREWS WITH NAIL OR WIRE
LUG & NOTCH FOR INDEXING SCREWS
SCREWS LOCKED CAN NOT BE LOST
COLD
TO
HOT
SHUT
H&B NIEDECKEN

LEAK-PROOF SHOWER STALL

SHOWER STALL is made of continuous sheet of ⅛ inch No. 10 gauge copper bearing steel, and the walls with the riser are *welded* to the base of the stall. This provides a positively and permanently leak-proof construction. Shower stall comes complete with Easy-clean Shower Head, Single Valve Mixer, Drain Outlet Fitting And Duck Curtain — in 3 sizes. Write now for complete details. Address Dept. AR.

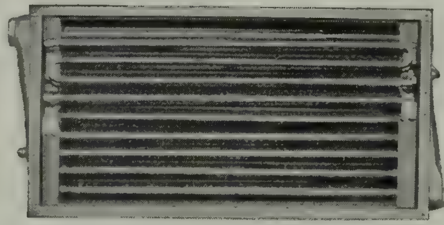
EASY-CLEAN SHOWER HEAD

AS illustration here shows: shower face is completely removed for thorough cleaning — by simply loosening 3 screws; and is again as easily replaced, with a set of notches guiding for proper placement and perfect alignment as secure as when originally assembled. Niedecken Showers in every detail are far advanced over all others: fully described in literature sent on request. Write Dept. AR.

HOFFMANN & BILLINGS MFG. CO.
MANUFACTURERS SINCE 1855.
MILWAUKEE, U. S. A.

INSTALL NIEDECKEN SHOWERS . . . . FOR GREATER EFFICIENCY VALUE

In the World's outstanding Structures,– in the most modern Heating, Ventilating and Air Conditioning Installations



The Standardized Light-Weight Fan System Heat-Surface

Pressures up to 350 lbs. gauge

Unit illustrated in section is

UNIVERSAL AEROFIN, 2½ to 200 lbs.

AEROFIN

is the Heat-Surface

Do you not owe it to yourself, and to your Clients or Patrons, to ascertain why this is so?

Complete information upon request to Newark★

Any Office will gladly render prompt, efficient, technical cooperation

AEROFIN CORPORATION

850 Frelinghuysen Avenue, NEWARK, N. J.
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CHICAGO

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AEROFIN is sold only by Manufacturers of Nationally Advertised Fan System Apparatus.

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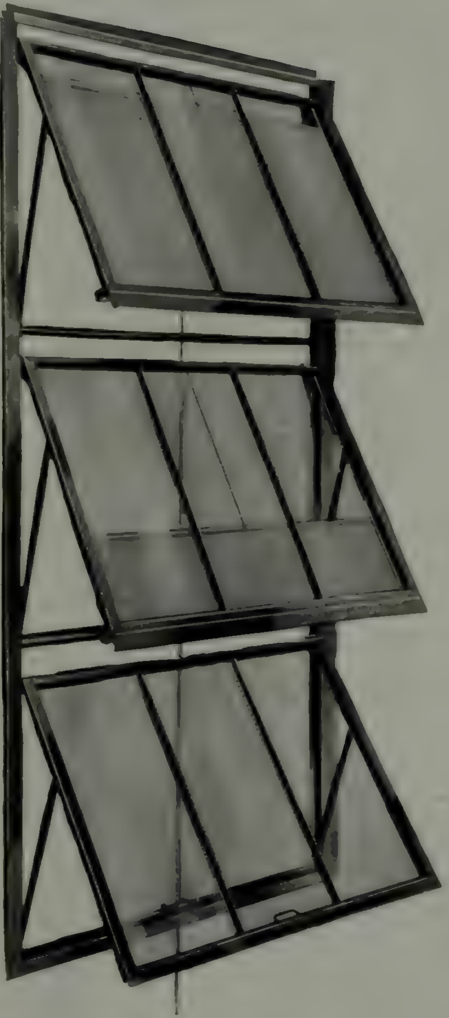
★Please mention where you saw this advertisement.

Modern Types of Projected Steel Windows

Truscon has carried the development of Projected Steel Windows far in advance of the original commercial type. In Donovan Awning Type, Monumental Projected and Architectural Projected Steel Windows Truscon offers ideal solutions for the window problems in many diversified types of buildings.

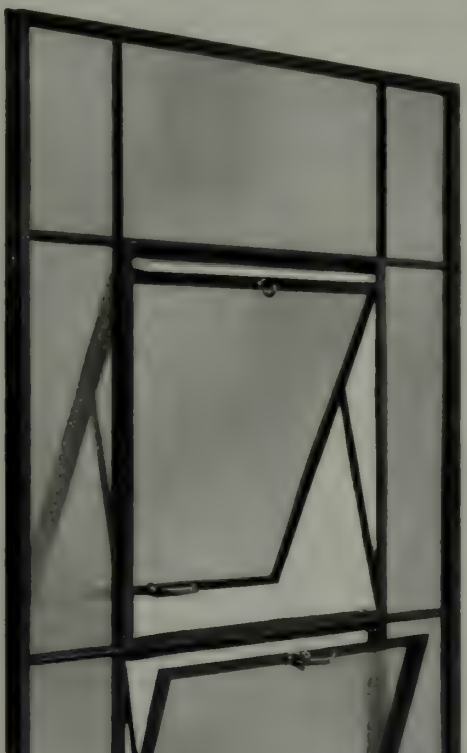
Truscon manufactures all types of Steel Windows and welcomes the opportunity of cooperating with architects in selecting the window which will give the most satisfactory results. Your inquiry will have thorough attention.

TRUSCON STEEL COMPANY
Youngstown, Ohio
Sales and Service Offices in all Principal Cities

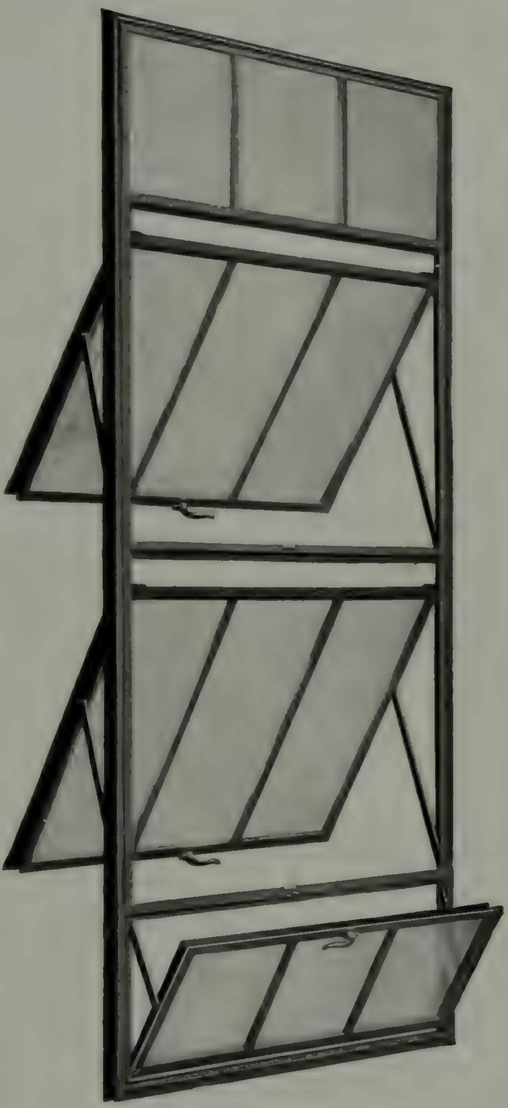


Donovan Awning Type Steel Windows. Movement of lower sash operates upper sash. All windows may be left open, or upper or lower sash closed. Shades on sash act as awnings. Draughtless ventilation and diffused daylight.

Truscon Door Frame and Trim. A complete unit built into the wall during its construction. Used in interiors of all buildings.



Architectural Projected Steel Windows. Furnished in numerous types and sizes to meet individual requirements.



Monumental Projected Steel Windows. A quality steel window for office and monumental buildings. Superior in design, materials, construction and workmanship. Furnished in numerous standard units with or without hopper vents.

TRUSCON

STEEL WINDOWS - STEEL DOORS - STEEL JOISTS - METAL LATHS - STEELDECK ROOFS - REINFORCING STEEL

the W. Irving Forge, inc.

W. IRVING TRADE MARK

Hand Forged
Wrought Iron and
Brass Hardware

THE design illustrated is one of many *new* items appearing in our *new* catalogue of Hand Forged Wrought Iron and Brass Hardware. This will be ready for distribution on or about April 1st.

Architects are invited to send for a copy.

No. 680 Brass Knob
No. 250K Iron Escutcheon

We work from Architects drawings and specifications

326-328 East 38th St. New York City

COMPOUND and PYRONO
WOOD DOORS

SEE OUR CATALOG IN SWEETS

THE COMPOUND AND PYRONO DOOR CO.
ST. JOSEPH, MICH.

FIRE-RETARDING, SOUND INSULATED AND KEY-VEENERED DOORS

THE CUTLER MAIL CHUTE

Is backed by—

An experience of fifty years.

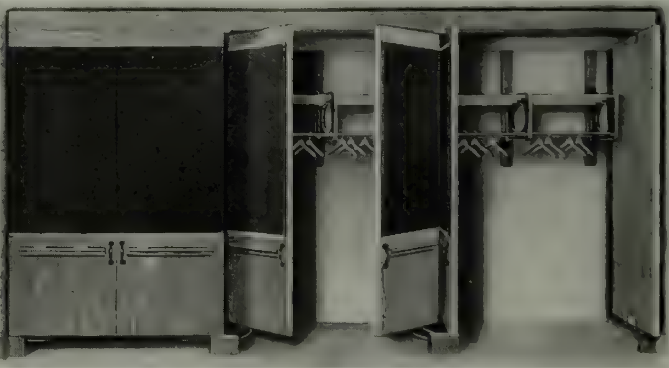
A factory equipped and operated for our own work exclusively.

A force of experienced erectors in the field.

A determination to keep our product and service up to the highest possible standard.

Correspondence invited

CUTLER MAIL CHUTE CO.
GENERAL OFFICES AND FACTORY
ROCHESTER, N.Y.



Evans "Vanishing Door" Wardrobe Class B-B without jambs or trim

THE wardrobe illustrated is made for plaster ends, backs and ceilings. No jambs nor trim required; only doors, fillet, hinges and interior of racks and garment hangers completing the installation.

The hinges used are of heavier construction than any previous manufacture and are unconditionally guaranteed to last the life of the building. There are no noisy tracks nor rollers to stick or bind, nor intricate mechanism to get out of order.

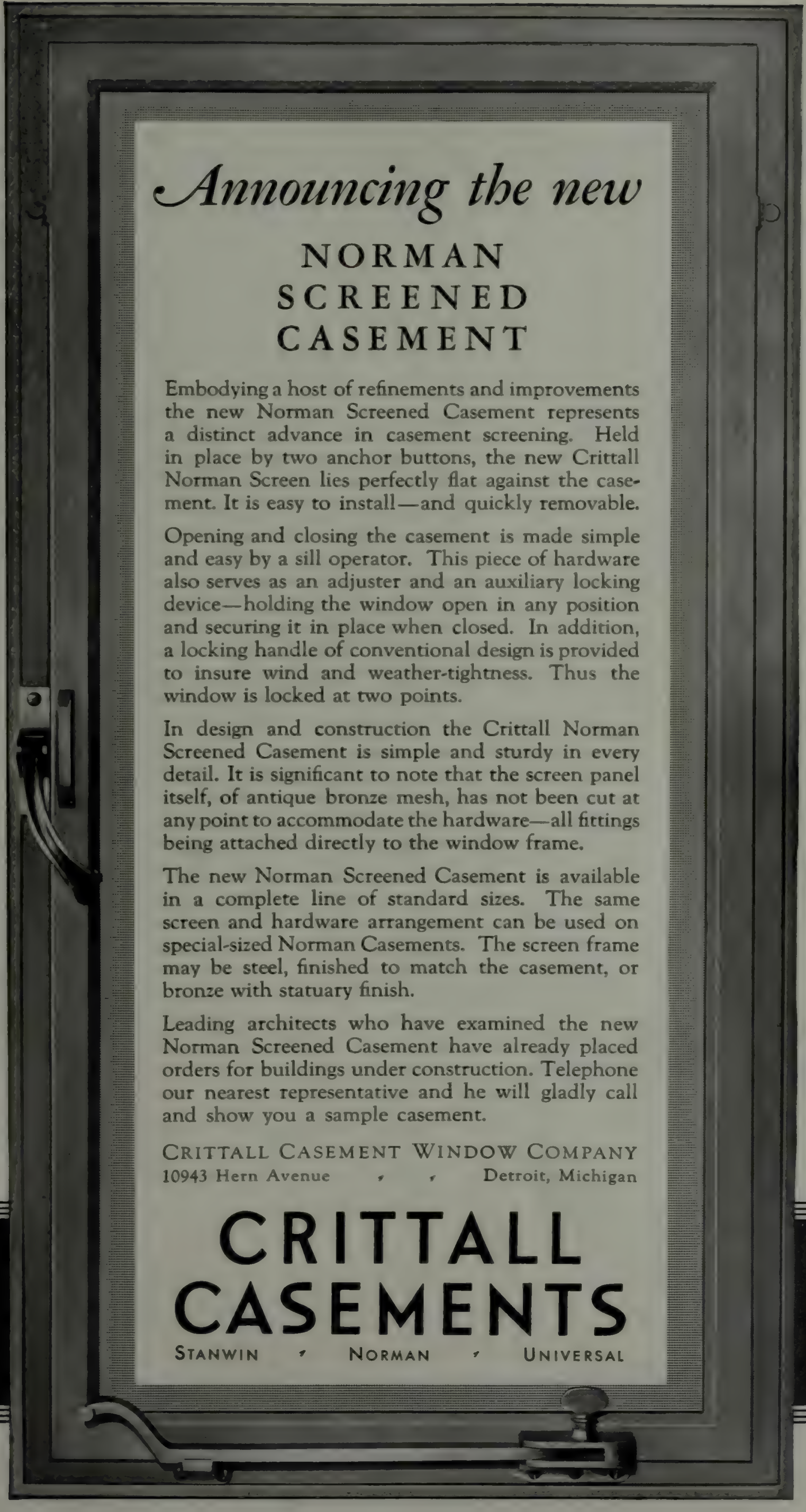
"Vanishing Door" wardrobes are furnished complete in the knockdown. All woodwork is cut to size and only needs nailing in place. The hinges are easier to put on than common butt hinges. The cost of installation is small.

Catalog "K," with specifications and price list, fully illustrates many types of school wardrobes. Write for a copy.

See Sweet's for 1931, Vol. C 4352

W. L. EVANS
Washington, Indiana, U. S. A.

VANISHING DOOR WARDROBES



Announcing the new

NORMAN SCREENED CASEMENT

Embodying a host of refinements and improvements the new Norman Screened Casement represents a distinct advance in casement screening. Held in place by two anchor buttons, the new Crittall Norman Screen lies perfectly flat against the casement. It is easy to install—and quickly removable.

Opening and closing the casement is made simple and easy by a sill operator. This piece of hardware also serves as an adjuster and an auxiliary locking device—holding the window open in any position and securing it in place when closed. In addition, a locking handle of conventional design is provided to insure wind and weather-tightness. Thus the window is locked at two points.

In design and construction the Crittall Norman Screened Casement is simple and sturdy in every detail. It is significant to note that the screen panel itself, of antique bronze mesh, has not been cut at any point to accommodate the hardware—all fittings being attached directly to the window frame.

The new Norman Screened Casement is available in a complete line of standard sizes. The same screen and hardware arrangement can be used on special-sized Norman Casements. The screen frame may be steel, finished to match the casement, or bronze with statuary finish.

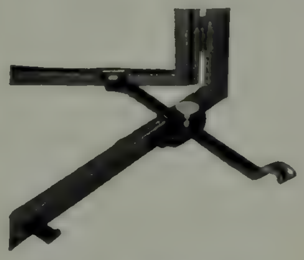
Leading architects who have examined the new Norman Screened Casement have already placed orders for buildings under construction. Telephone our nearest representative and he will gladly call and show you a sample casement.

CRITTALL CASEMENT WINDOW COMPANY
10943 Hern Avenue • • Detroit, Michigan

CRITTALL CASEMENTS

STANWIN • NORMAN • UNIVERSAL

The locking handle on the new Norman Screened Casement is of solid bronze and engages in a beveled strike plate, pulling the sections together snugly.



The sill operator is of solid bronze. It also serves to hold the window in any open position by means of a thumbscrew adjustment.

SASH CHAINS

"Red Metal"
(Solid Bronze)
"Giant Metal"
(Phosphor Bronze)
and
Steel Sash Chains
Have been specified by discriminating architects for over 45 years

See page C3513 Sweet's Architectural Catalogues.
Have you our A1 Sash Chain Catalogue on file?

The Oldest and Best Sash Chain on the Market

THE SMITH & EGGE MFG. CO.
BRIDGEPORT, CONN.
ORIGINATORS OF SASH CHAINS

WATER DAMAGE

FROM FIRE EXTINGUISHING ANNUALLY CAUSES HEAVY LOSSES. ARCHITECTS GUARD AGAINST LOSSES BY SPECIFYING APPROVED FIRE EXTINGUISHERS IN THEIR PLANS.

DATA ON REQUEST

Pyrene Manufacturing Company
NEWARK NEW JERSEY
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KANSAS CITY
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Making Big Closets out of Little Ones

HOOD EXTENSION GARMENT HANGERS

—are making small closets popular. Clothes are neatly kept in less than one-third the usual space. Closets are made more attractive with a big saving of actual floor space in closet construction. Many of the fine hotels, apartments, schools and residences have included this modern closet feature in their building. Architects are specifying HOODS in their plans. (See Sweet's Catalog.) Sold by Hardware and Builders' Supply dealers, department and furniture stores. Descriptive literature and price list on request.

EXTENSION GARMENT HANGER CO.
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25 CENTS EACH
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THESE BACK COPIES

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FEBRUARY 1929 MARCH 1930
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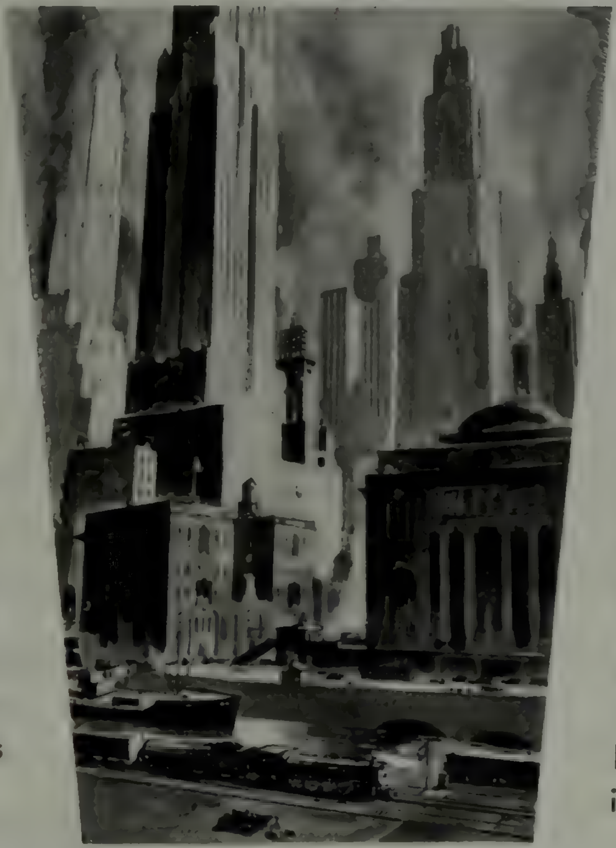
THE ARCHITECTURAL RECORD
119 West 40th Street
New York City

BEHIND STROWGER P-A-X

LONG MANUFACTURING EXPERIENCE —WORLD-WIDE USAGE

Users of Strowger P-A-X often express wonder that Strowger equipment is able to perform so well—to show such durability and sturdiness under the stress of long continued use. They wonder why the relays and switches of which the central switchboard is constructed should be able to "stand up" year after year under the terrific punishment of hundreds—in many cases, thousands—of daily telephone calls and almost entirely without attention or expense. They wonder at its unfailing "readiness to serve."



The answer is that behind Strowger P-A-X there is a thoroughly experienced organization—the same engineering staff which developed and perfected the dial telephone system now in public service the world over. Strowger engineers know, from long experience in serving the telephone industry, that high standards of construction represent, in the long run, the lowest cost to the purchaser. Studies will be gladly made, upon request, to determine the adaptability of any of the Strowger products listed below to any project existing or contemplated.

STROWGER AUTOMATIC
DIAL SYSTEMS

INCLUDE:

Public Automatic Telephone and Signalling Systems
Private Automatic Telephone Systems—(Strowger P-A-X)
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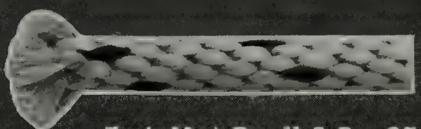
Trade-Mark

SAMSON SPOT SASH CORD



Trade-Mark Reg. U. S. Pat. Off.

MADE of extra quality stock, carefully inspected, and guaranteed free from imperfections of braid or finish. No adulteration to increase weight and decrease wear.

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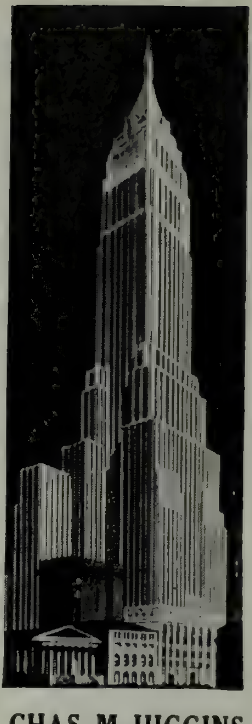
BOSTON, MASS., U. S. A.



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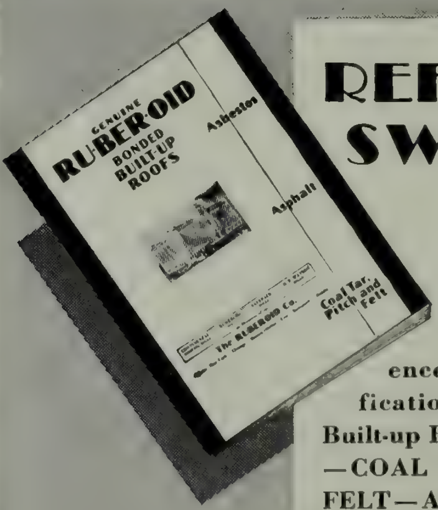

REFER TO SWEET'S

For your convenience, complete specifications of RU-BER-OID Built-up Roofs—ASBESTOS—COAL TAR PITCH and FELT—ASPHALT—will be found in Sweet's.

In addition, our Engineering Department is always at the architects' service to help solve problems raised by unusual conditions.

Write or 'phone any office listed below.

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ROOFING MANUFACTURERS FOR OVER FORTY YEARS
Sales Divisions: RUBEROID MILLS—CONTINENTAL ROOFING MILLS
SAFEPACK MILLS—H. F. WATSON MILLS—ETERNIT

Offices & Factories: New York, N. Y.—Chicago, Ill.—Millis, Mass.—Erie, Pa.—Baltimore, Md.—Mobile, Ala.

UNIQUE DISTINCTION in this HOTEL RADIO Equipment

The Ortho-Tone Company, originators of "radio in every room" systems, for hotels, again pioneers in this field with the Ortho-Tone Pra-1-40. A machine which, though smaller, embodies all of the advantages of the larger Ortho-Tone machines. Ortho-Tone Pra-1-40 is designed for small hotels, schools, and high-class tourist camps.

Ortho-Tone also offers their regular line of proved radio fixtures. A ceiling fixture which combines lights, fan, and loud speaker with special non-radiating features which prevent room-to-room interference, a wall panel which permits the guest a greater selection of program—these are but a few of the advantages to be found in Ortho-Tone equipment.

To further aid the profession the Ortho-Tone Company has prepared a booklet "Radio in Every Room," in which they offer the results of their experience as builders of fine hotel radio equipment. The widespread use of Ortho-Tone installation gives the manufacturers an opportunity to meet radio needs of any kind. The booklet is yours for the asking.

ORTHO-TONE CO.
4002 Woodland Ave., Kansas City, Mo.

Two Names—
Two Traditions . . .

The New
WALDORF-ASTORIA
HOTEL
to be
"BRYANT-EQUIPPED"

Architects:
Schultze & Weaver
New York

Consulting Engineer:
Clyde R. Place
New York

Building Construction:
Thompson-Starrett Co.
New York

THE name "Waldorf-Astoria" has, for almost forty years, been associated with the best obtainable in hotel accommodations.

The name "Bryant" has, for more than forty years, been associated with the best obtainable in wiring devices.

There is nothing surprising, therefore, in the fact that Bryant "Superior Wiring Devices" have been selected for installation in the New Waldorf-Astoria, now under construction.

See our catalogue, filed in the new 4-volume Sweet's for 1931, Vol. D, pages 5867 to 5873 and page 6068

A-331

BRYANT
SUPERIOR WIRING DEVICES
Manufactured by
THE BRYANT ELECTRIC COMPANY, BRIDGEPORT, CONN.

MANUFACTURERS OF "SUPERIOR WIRING DEVICES" SINCE 1888-MANUFACTURERS OF HEMCO PRODUCTS

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CHICAGO
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Thermostatic
Water Mixing Valves

TYPE L 9 OCTAGON DESIGN

Catalog C of Leonard Valves, showing Octagon design and Colors to match bathroom fixtures, is now ready.
Write for your copy.

LEONARD-ROOKE COMPANY
Elmwood Station Providence, R. I.

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PANELLED ROOMS

NO other interiors are quite so distinguished as old English panelled rooms. Several historic examples of various periods may be seen by architects or their clients at Charles Roberson's. Photographs and measured drawings of these and many others are also available.

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OF LONDON

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NEW YORK CITY
RHINELANDER 4-8799

Corrugated for stucco; flat for plastering.

Greater Rigidity!

A small mesh ribbed lath, more rigid than any other of equal weight. Definite assurance of perfect key without waste of plaster. Heat-treated and reannealed after forming . . . then covered with special *Milcor* paint. Send for a sample section.

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Sales Offices: New York, 418 Pershing Square Building; Boston, Mass., 726 Little Building; Atlanta, Ga., 207 Bona Allen Building; Minneapolis, Minn., 642 Builders Exchange Building; Little Rock, Ark., 104 W. Markham Street

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Individualizes Homes

With rare distinction, architectural charm is accentuated and enhanced by the soft, warm colors of Briar Hill *Golden Tone* Ashlar Wall Facing. Its diversity of fine surface textures, rich variety of beautifully blending tints, convenient random lengths and variable course heights offer exceptional opportunity for original and exclusive effects.

May we send you our interesting booklet of Briar Hill *all-stone* homes—and free samples of the stone to show colors, finishes and textures?

THE BRIAR HILL STONE CO., Glenmont, Ohio
(See our Catalog in SWEET'S)

USE COLOR—TOO—WHEN YOU BUILD WITH STONE

PILLSBURY FLOUR MILL *gives a tip on roof insulation*

MEMORANDUM
Note thickness of Cork on the roof of the Pillsbury Mill in Minneapolis

Every building you design has a roof . . . and every roof can use cork as this mill does

In a flour mill, the roof must do more than just shed water. In every building, a really good roof stops heat almost as completely as it shuts out rain.

Take the Pillsbury Flour Mill, for example. Where flour is made, the moisture contained in the grain produces a high relative humidity in the mill building. If heat leaks through the roof, the inside surface temperature drops. Moisture in the air condenses, and the condensate drops into the milling machinery. So Pillsbury has insulated the roof with three inches of Armstrong's Corkboard, an effective barrier to the passage of heat.

For office buildings and others where there is no condensation, 1½ or 2 inches of insulation suffice to cut fuel costs and increase tenants' comfort. In any thickness from one inch up, Armstrong's Corkboard supplies an easily laid, permanent insulation.

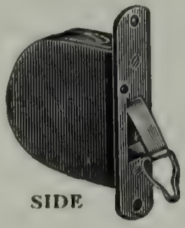
Cork Products are playing an increasing part in every type of building use. In addition to roof insulation, Armstrong's Corkboard is ideally suited for insulating walls of buildings. Cork serves, too, where low temperatures must be maintained. The new quick-freeze industry relies on Corkboard in thicknesses from 6 to 12 inches to hold temperatures as low as sixty degrees below zero. Armstrong's Corkoustic, the insulating acoustical material, absorbs sound and reduces noise in schools, churches, and public buildings. Cork Machinery Isolation eliminates noise and vibration from all types of machinery. Cork Pipe Covering prevents loss of refrigeration from cold lines. Armstrong's and Nonpareil Insulating Brick line stacks in hotels, apartment houses, and public buildings to keep heat from adjoining rooms.

Architects are continually finding new uses for Armstrong's Cork Products. Cork may be just the material you are looking for to fit some unusual installation. Armstrong engineers are available for insulation advice, and Armstrong research facilities will gladly be placed at your disposal on new and unusual uses. Write to Armstrong Cork & Insulation Co., 901 Concord St., Lancaster, Pa.

Armstrong's (A) *Product*

Armstrong Cork & Insulation Company

Corkboard . . Cork and High Temperature Pipe Covering . . Corkoustic . . Cork Machinery Isolation . . Insulating Brick and Block



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Backed by Forty Years' Experience

Each Caldwell Sash Balance has a quality built into it that assures satisfaction, and maximum length of service.

Box Frames can be eliminated, thus contributing greatly to making a building of warm construction. They also permit the use of narrow mullions and double hung windows in rows to give the casement effect. Mortises can be cut at the mill to one size. When the saving of labor and material is considered, they cost no more than ordinary weights and cords.

Send for booklet "Present Day Architect"
Giving Mortise Dimensions

CALDWELL MANUFACTURING COMPANY
ROCHESTER, NEW YORK, U. S. A.

Why SILVER LAKE SASH CORD Lasts Longer

Made of 100% long staple cotton. It is tightly braided and pre-stretched. Has no false core to disintegrate or rot away. Diameters are uniform and a special finish makes for better flexing over window pulleys. And, with all the advantages, it costs but a few cents more per window. Write for details.

SILVER LAKE COMPANY
Newtonville, Massachusetts

LOOK FOR THE NAME STAMPED ON EVERY FOOT OF CORD

Silver Lake

TECHNICAL CO-OPERATION

In the new Commercial National Bank Building in Peoria, Illinois, cooperation of the local electric service company with the architects resulted in an electrical installation that assures the building against electrical obsolescence.

COMMERCIAL NATIONAL BANK BUILDING
Peoria, Illinois
Hewitt, Emerson & Gregg, Peoria, Illinois
ARCHITECTS

For information about trends in lighting standards and about adequate wiring call on the Lighting Bureau of your local electric service company or write direct.

NATIONAL ELECTRIC LIGHT ASSOCIATION
420 LEXINGTON AVENUE . . . . NEW YORK, NEW YORK

Greenhouse Problems Solved

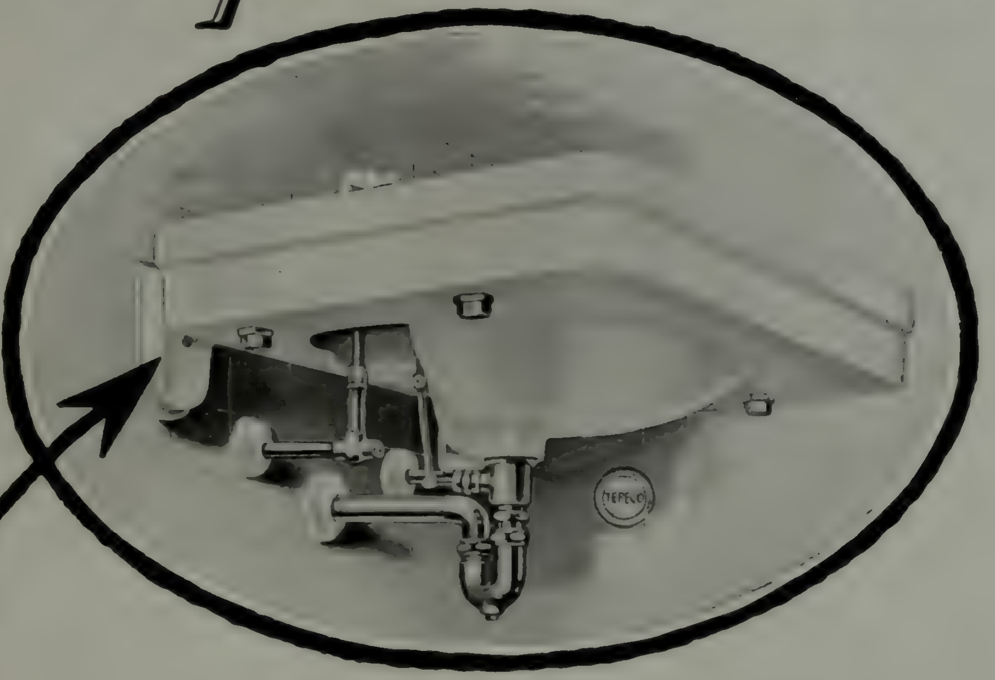
Architects find in the King type of construction a ready solution to many greenhouse problems. The King design can be adapted gracefully to a variety of architectural motifs; the structural elements are sturdy and durable, and suited to all kinds of usage.

Let our Architects' Bureau co-operate with you in preparing plans and tentative sketches. No obligation. Send for particulars.

KING CONSTRUCTION COMPANY
515 Wheatfield Street North Tonawanda, N. Y.
NEW YORK CITY PHILADELPHIA, PA. BOSTON, MASS.
SCRANTON, PA. TOLEDO, OHIO SCHENECTADY, N. Y.

King
GREENHOUSES

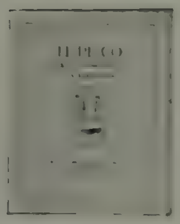
A Te-pe-co Product



A Marked Improvement in
CONCEALED BRACKET LAVATORIES

UNLESS the service is of an extremely severe nature the new Te-pe-co Concealed Bracket Lavatory on Wall Carrier will prove a welcome innovation to Architects for their plans in residences, hotels, apartments and buildings of a semi-public nature.

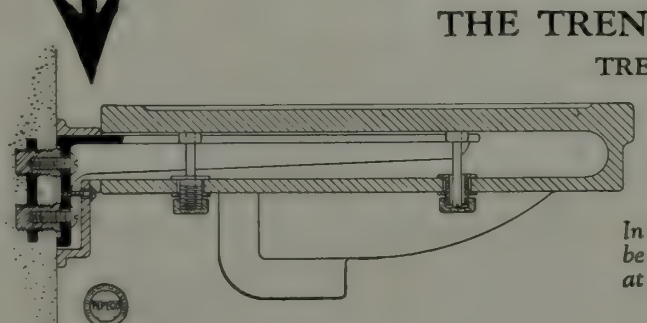
With a Te-pe-co Vitreous China Lavatory, in sizes from 24x20 to 33x24 can now be supplied this bracket, attached as per diagram below. Its adjustability permits leveling of lavatory. It eliminates the clumsiness of prior types of brackets. The result is an installation of pleasing appearance, simplicity and approved sanitation.



Our Lavatory Booklet, describing this fixture, if not already in your file will be gladly mailed.

THE TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY, U. S. A.

National Showrooms—New York City
101 Park Ave., Entrance on 41st St.
Philadelphia—Architects Bldg., 17th & Sansom Sts.
Branch Offices: Boston, San Francisco
Export Office: 115 Broad Street, New York City



In addition to leveling feature it will be noted that lavatory may be set at any desired height.

OUR GUARANTEE

We make but one grade of ware—the best that can be produced — and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.

ARCHITECTURAL BRONZE
BY THE
Kawneer
COMPANY
NILES, MICHIGAN
and subsidiaries
PRODUCTS
RUSTLESS METAL SEALAIR WINDOWS - DOORS - ARCHITECTURAL CASTINGS AND STORE FRONTS

CLASSIFIED DIRECTORY OF ADVERTISERS

Alphabetical Index to Advertisers, Page 170

After reviewing advertisements in this issue—consult Sweet's Architectural Catalogues for 1931 for up-to-date catalogues and specifications on the products of most of the manufacturers.

Acid Proof Chemical Stoneware
Knight, Maurice A.

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Automatic Sprinklers
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Bakelite
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Basement, Windows—Steel
Detroit Steel Products Co.
Kalman Steel Co.
Truscon Steel Company

Beads—Corner Metal
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Milcor Steel Co.
Truscon Steel Company

Beams, Angles, Channels, Etc.
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Carnegie Steel Company
Illinois Steel Co.
Jones & Laughlin Steel Corp.

Boilers—American Gas Products Co.
American Radiator Co.
Dahlquist Mfg. Co.
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Pierce, Butler & Pierce Mfg. Co.
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Wood, Gar, Engineering Co.

Bolts—Door—Corbin, P. & F.

Brass and Bronze
See "Ornamental Metal"

Bridges—Steel—American Bridge Co.
Bethlehem Steel Co.

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Angier Corporation

Buildings—Steel
Carnegie Steel Company
Illinois Steel Co.

Butts—Corbin, P. & F.
Stanley Works

Cabinet Work
American Walnut Manufacturers Association
Grand Rapids Store Equipment Corp.

Cabinets—Kitchen
Olean Metal Cabinet Works, Inc.

Cabinets—Toilet Paper
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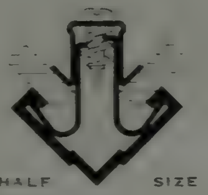

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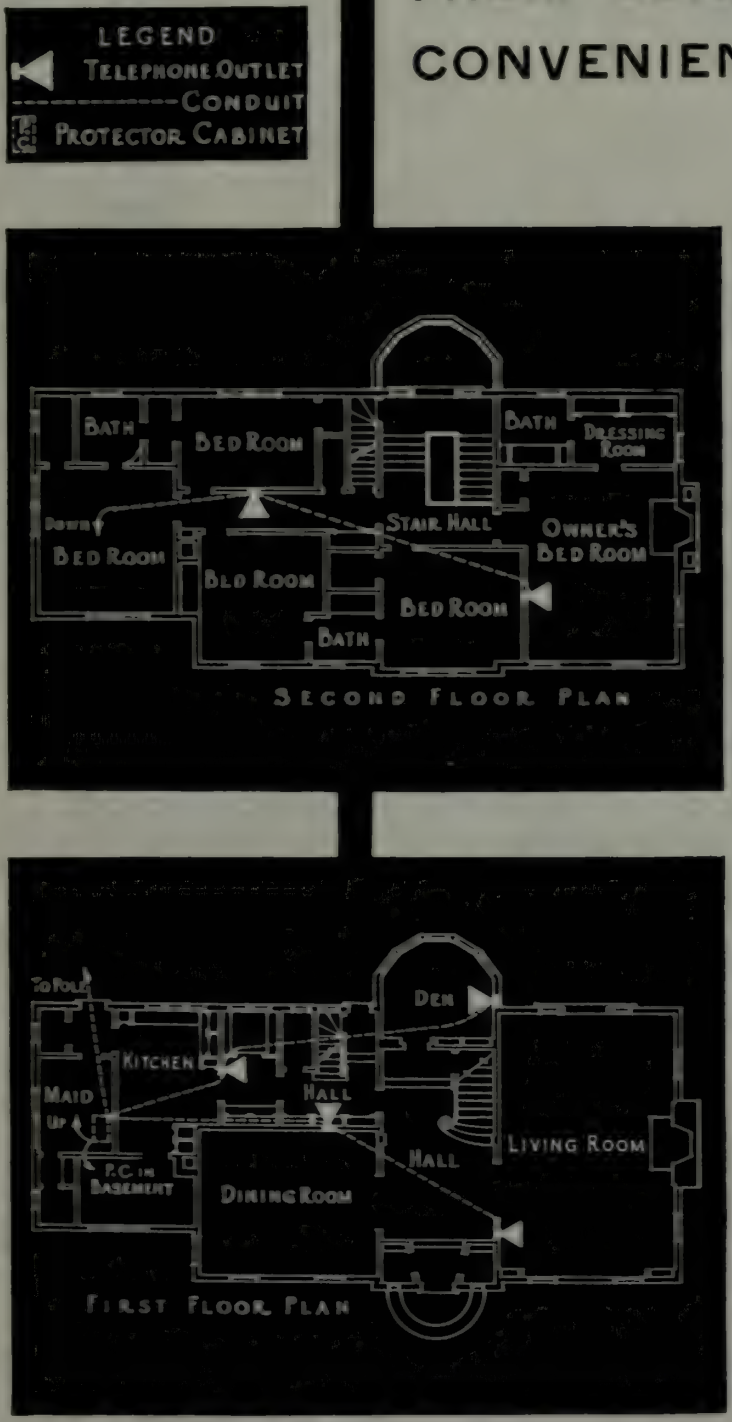

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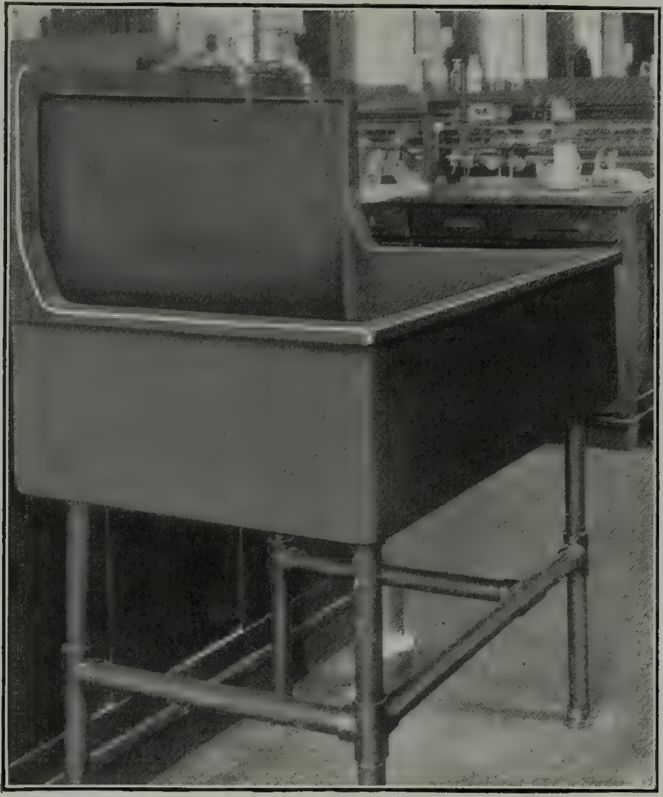

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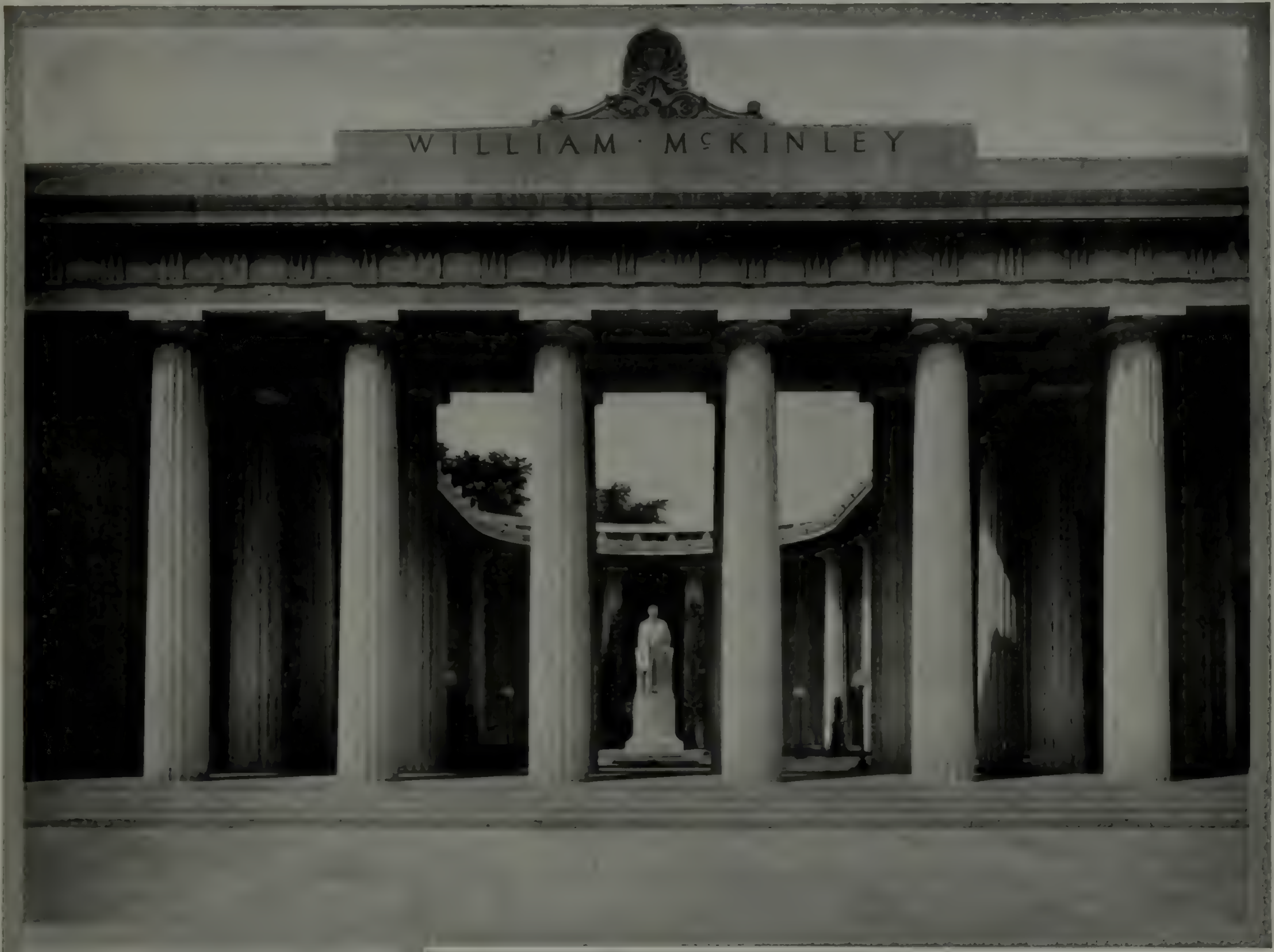

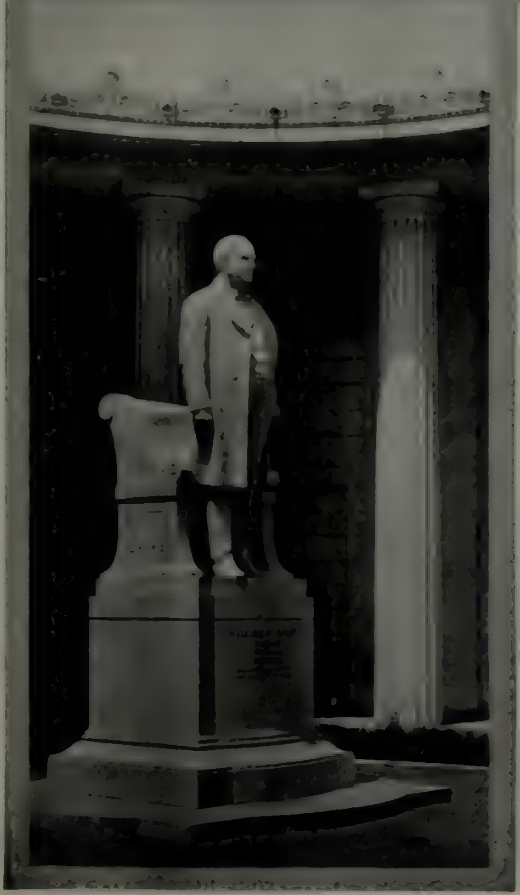

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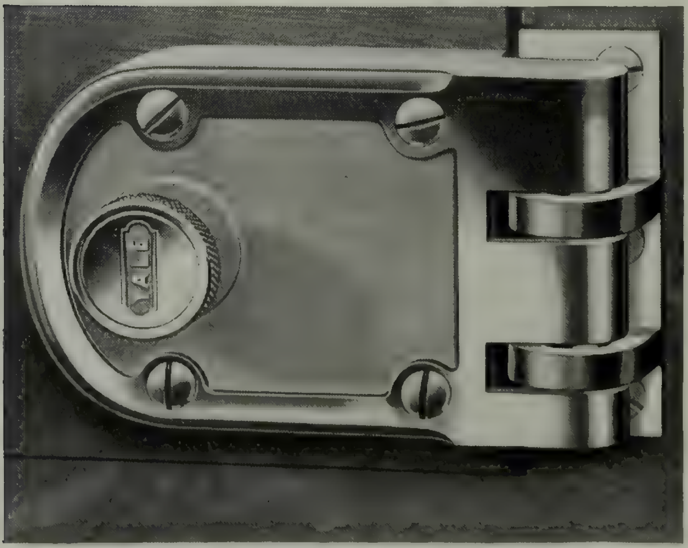

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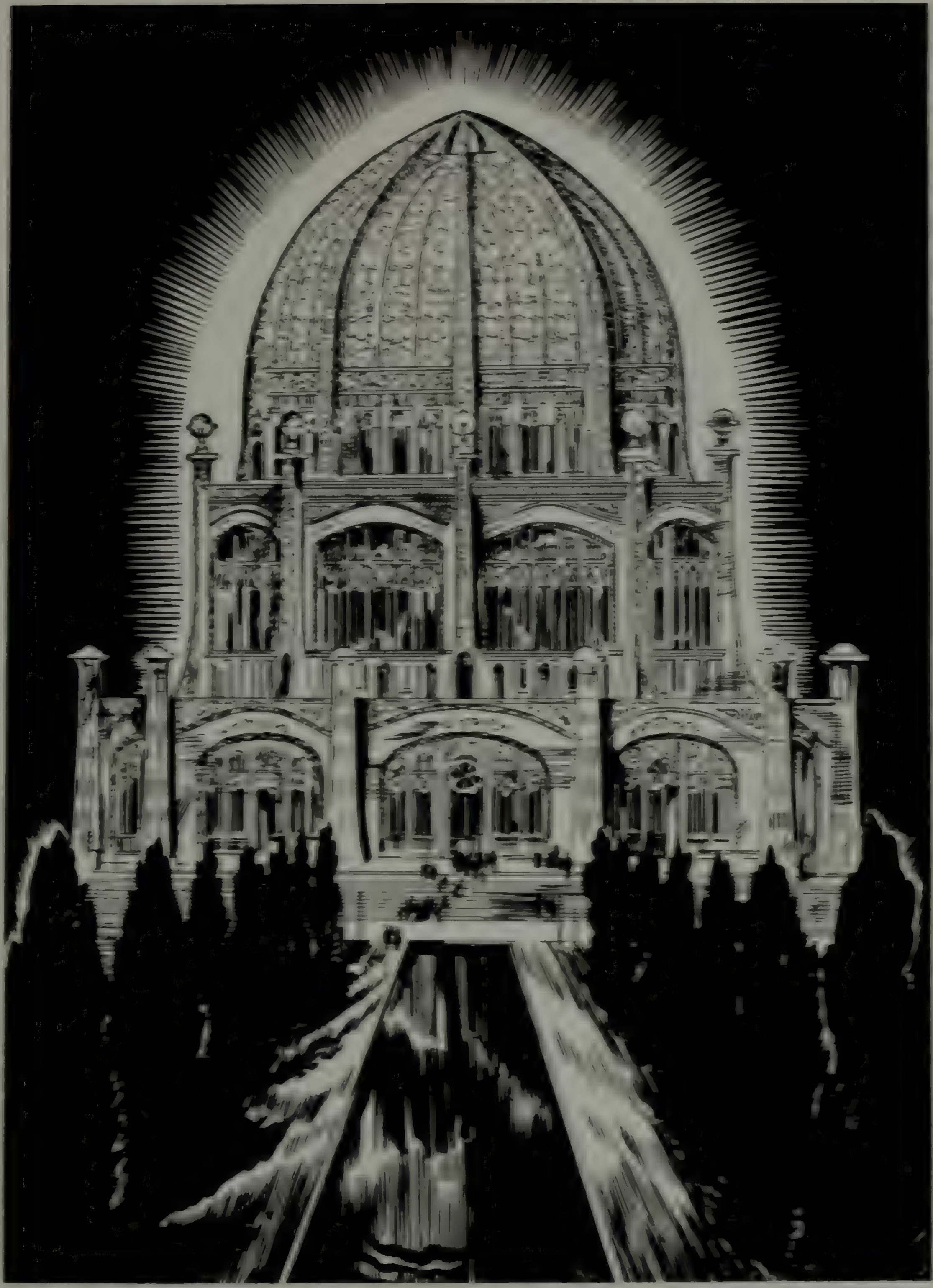

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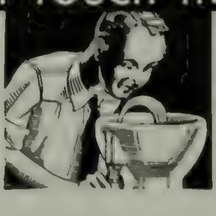

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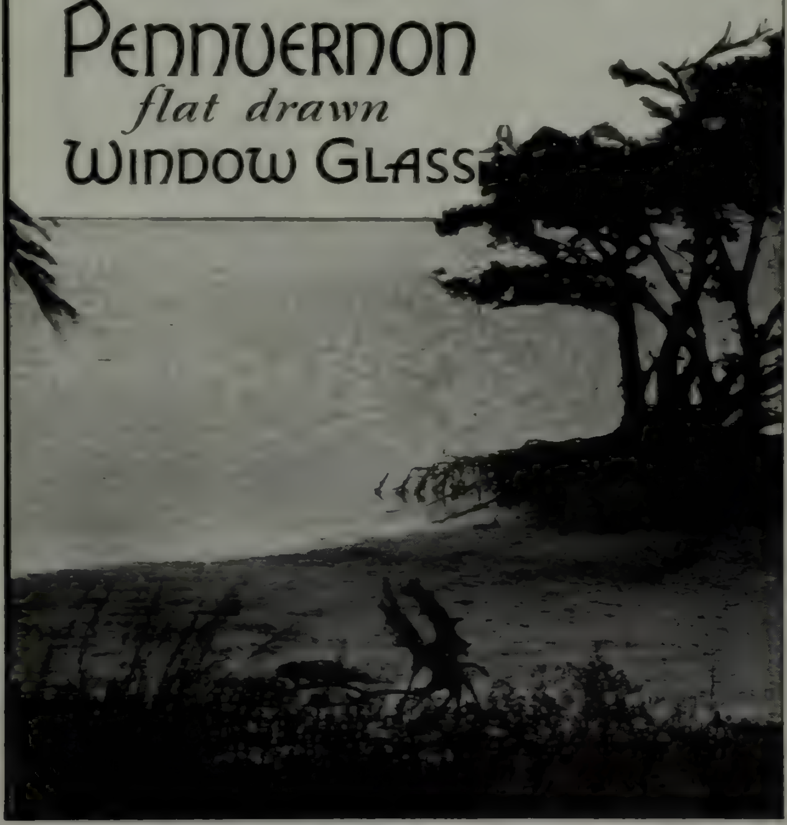

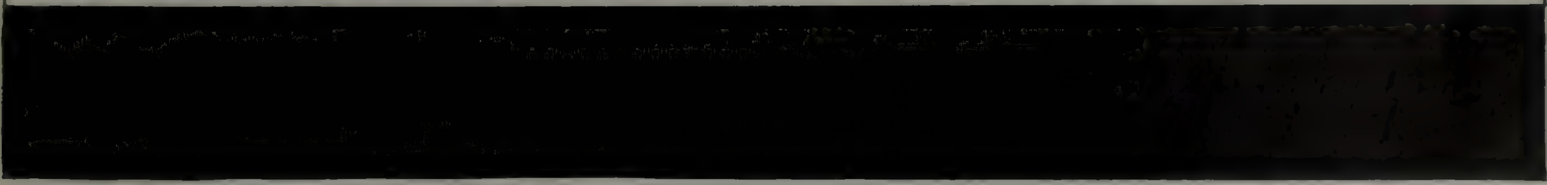

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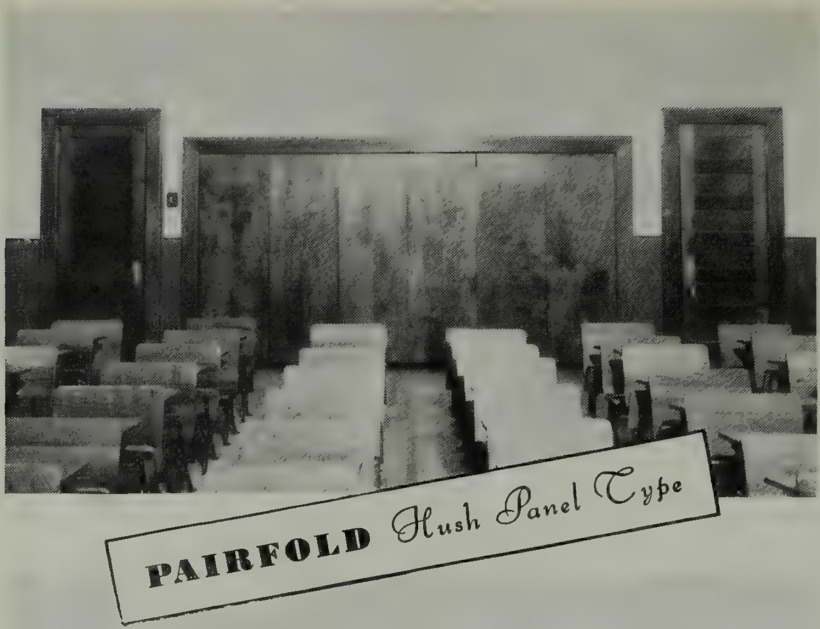

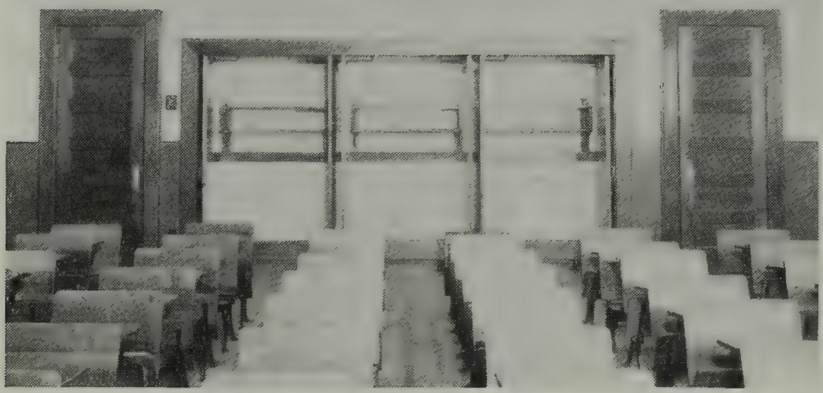

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